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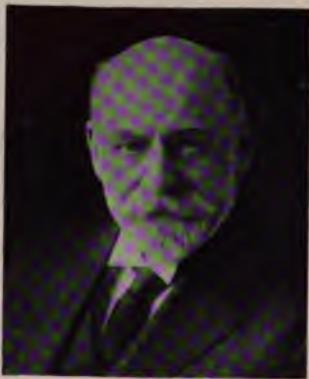
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of
American Universities

Volume 1

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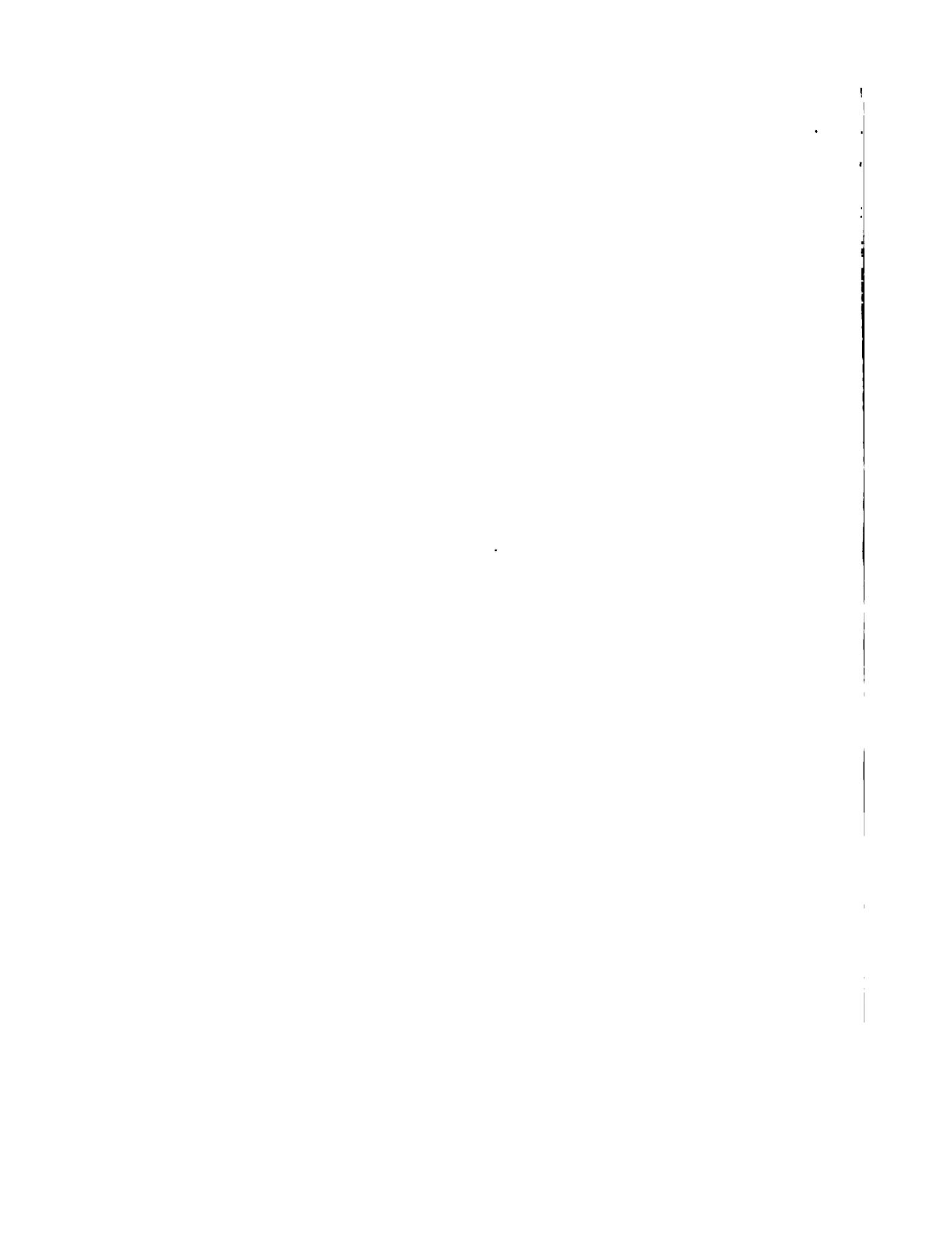
YEAR BOOK

VOL. I

1914

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Introduction

By J. C. Branner

Stanford University opened in 1891 with one student of geology and no professor. The professor of geology came in February, 1892, and began his work in the second semester. The first student with his major in geology was A. H. Purdue, who registered as a special student from Yankeetown, Indiana. In the second semester, however, the registration of geology students was as follows:

George H. Ashley, now administrative geologist of the U. S. Geological Survey.

Thomas C. Hopkins, now professor of geology in the University of Syracuse.

John H. Means, now mining engineer, London, England.

John F. Newsom, afterwards associate professor of geology, Stanford University; now consulting geologist, Palo Alto, Cal.

A. H. Purdue, now state geologist of Tennessee.

C. E. Siebenthal, now of the U. S. Geological Survey.

W. E. Stuart, now lawyer of San Francisco, Cal.

Horace E. Williams, now of the Geological Survey of Brazil.

During the first year the only instruction given in geology was that given by the writer. Being a believer in the value of field geology to students, the field work was inaugurated the first semester, and has always been kept up and insisted upon as an important, and indeed as the most essential part of the education of a geologist.

In the year 1892 Dr. J. P. Smith was added to the geological faculty, and he at first gave instruction both in paleontology and in mineralogy.

Dr. J. F. Newsom was appointed assistant (later associate) professor of geology in 1898, and there after had charge of the field geology until 1910 when he resigned.

Dr. N. F. Drake was appointed associate professor of geology in 1911, and in 1912 resigned to become state geologist of Arkansas, and professor of geology at the University of Arkansas.

C. F. Tolman, Jr., was appointed associate professor of economic geology in 1912.

A course of lectures on economic geology was given by Dr. R. A. F. Penrose Jr. of Philadelphia in 1892-3.

In 1897-8 Dr. Waldemar Lindgren gave a course of lectures on mining geology.

In 1905 Dr. Austin F. Rogers was made assistant professor of mineralogy and petrography, and since that time all instruction in those subjects has been given under his direction.

The demand for instruction in mining and metallurgy was so strong and so persistent, that in 1902 provision was made for metallurgy by the appointment of Dorsey A. Lyon as assistant professor. In 1904 Mr. Lyon was succeeded by Professor G. H. Clevenger.

In 1907 J. F. McClelland was appointed professor of mining engineering. He was succeeded by Assistant Professor D. M. Folsom in 1910.



**Degrees Conferred in the Department of Geology and Mining
From 1892 to January, 1914.**

Year.	A. B.	E. M.	M. A.	Ph. D.
1892.....	2	..	4	..
1893.....	1	..	1	..
1894.....	1	..	..	1
1895.....	7	..	..	..
1896.....	5	..	..	..
1897.....	1	..	..	1
1898.....	5	..	..	..
1899.....	6	..	..	..
1900.....	3	..	2	..
1901.....	10	..	..	1
1902.....	8	..	1	1
1903.....	8	..	..	..
1904.....	10	..	1	..
1905.....	13	1	..	..
1906.....	13	1	..	..
1907.....	12	..	2	..
1908.....	11	..	..	..
1909.....	16	..	..	..
1910.....	13	1	1	1
1911.....	16	3	..	..
1912.....	18	2	3	..
1913.....	18	..	2	..
1914 (to January).....	9	..	..	..
	—	—	—	—
	206	8	17	5
Total Degrees A. B.....				206
Total advanced degrees				30
Grand total				236
Graduates of the department, 1891-1914.....				216
Majors not graduating, 1891-1914.....				332
Undergraduates at present				78
Total major students				626

Table Showing Registration of Students in Courses Given in the Department of
Geology and Mining.





JAMES PERRIN SMITH, PH. D.

The Founding of the Geological and Mining Society

By James Perrin Smith.

In the fall of 1892 the students of geology at Stanford University organized a Geological Club with the following charter members:

George H. Ashley, Ph. D. 1894.	John H. Means, A. M. 1892.
Rufus Buck, A. B. 1895.	Deane P. Mitchell, A. B. 1896.
Thomas K. Cole, A. B. 1896.	John F. Newsom, A. M. 1892.
Herbert C. Hoover, A. B. 1895.	Albert H. Purdue, A. B. 1893.
Thomas C. Hopkins, A. M. 1893.	Claude E. Siebenthal, A. M. 1893.
Edwin B. Kimball, A. B. 1895.	Herbert S. Stark, A. B. 1894.
	William E. Stuart, A. B. 1895.

No minutes have come down to us from that time, but the writer remembers that meetings were held with some degree of regularity, and a more or less informal organization kept up, until the reorganization of the society in 1899 and 1900.

Besides the charter members of the club, several other loyal and zealous members were added in the next year or two, among whom the following stand out prominently:

Frank M. Anderson, A. M. 1895.	James M. Hyde, A. B. 1901.
Noah F. Drake, A.B. '94, A.M. '96.	Newton B. Knox, A. B. 1895.
James A. Diggles, '95.	William A. Prichard, A. B. 1898.
Raymond S. Garfield, A. B. 1897.	John B. Rice, A. B. 1897.
John J. Hollister, A. B. 1896.	George W. Riter, A. B. 1896.
	Chester A. Thomas, A. B. 1898.

In 1899 the club was revived and a project set on foot to reorganize it into a geological society. At first it was proposed to make it a Greek-letter society, but this plan met with too much opposition and was finally given up.

In 1900 the Geological Club was formally reorganized as the Geological Society, with the following men as charter members:

Ralph Arnold, A. B. 1899, A. M.	Byron N. Jackson, A. B. 1901.
1900, Ph. D. 1902.	C. E. Knecht, A.B. '99, A.M. 1900.
Harry H. Bell, A. B. 1900.	Louis D. Mills, A. B. 1901.
Walter L. Ehrich, '03.	Edward H. Nutter, A. B. 1902.
Charles E. Gilman, '01.	William H. Parkin, A. B. 1901.
Harry L. Haehl, A.B. '01, A.M. '02.	Milnor Roberts, A. B. 1899.
Harold Havens, '01.	Hugh Rose, A. B. 1900.
Theodore J. Hoover, A. B. 1901.	Ernest A. Strout, A. B. 1901.
James M. Hyde, A. B. 1901.	William Q. Wright, A. B. 1900.

In the reorganization the charter members elected as Alumni members all the members of the parent body, and added to that number Horace E. Williams, A. M. 1892, who had left the University before the founding of the Geological Club.

The Geological Society was now launched upon a successful career. The members elected were chosen upon a basis of scholarship and good fellowship. Recommendation by the department faculty was esteemed a very high honor.

In 1903 the Geological Society resolved to expand and give its benefits to students of other universities. Its constitution and by-laws were amended to permit the establishment of chapters in other institutions, and the following officers were elected for the national organization:

President—Ralph Arnold.

Vice President—William L. Walker, A. B. 1903.

Secretary-Treasurer—Ruliff S. Holway, A. B. 1903.

These gentlemen were to serve as an executive committee to organize the national society, which then called itself The Geological Society of American Universities.

This attempt at expansion proved premature, and for many years the Stanford chapter remained the only one. This did not discourage the members, for the society was very much alive at home, and kept up in the following years a vigorous and enthusiastic membership that has played an important part in the scientific and social activities of Stanford University.



BACK ROW—LEE, CLUTE, PYLE, MORGAN, STONE, NELSON, VRANG.
J. HUNLEY, HAYES
FRONT ROW—COOPER, HILBY, CARLTON, CLARK, AMBROSE, NIXON, LONGMIRE, ANDERSON

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OF THE STANFORD SECTION,
GEOLOGICAL AND MINING SOCIETY
OF AMERICAN UNIVERSITIES

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Vice President	W. G. Cooper
Secretary	W. R. Longmire
Treasurer	C. M. Vrang

HONORARY MEMBERS

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Prof. L. W. Bahney	Dr. J. A. Holmes	V. C. Osmont
*Dr. J. C. Branner	H. C. Hoover	*Dr. A. F. Rogers
J. D. Clarke	Prof. D. A. Lyon	Dr. S. Shedd
*Prof. G. H. Clevenger	Dr. J. C. Merriam	W. J. Sinclair
Dr. N. F. Drake	Dr. G. M. Murogochi	*Dr. J. P. Smith
E. L. Finlong	Dr. J. F. Newsom	J. A. Taff
*Faculty.		*Prof. C. F. Tolman

ASSOCIATE MEMBERS

P. M. Avery	N. E. Dole	E. W. Rice
B. W. Crandall	W. N. Lacey	W. R. Waeltz
R. W. Dodd	F. S. Pratt	

ALUMNI MEMBERS

(See Directory.)

ACTIVE MEMBERS

A. W. Ambrose	J. H. Forbes	G. W. LaPeire
R. E. Anderson	A. D. Fyfe	W. S. Lee
J. J. Beeson	E. B. Hall	G. B. Lyman
D. P. Carlton	W. C. Hammon	H. J. Morgan
D. Clark	H. B. Hannibal	W. A. Nelson
C. E. Clowe	F. W. Hayes	C. H. Nixon
W. S. Clute	G. R. Hilby	K. D. Pyle
W. G. Cooper	I. M. Hulsman	J. C. Ray
W. F. Dietrich	J. B. Hunley	F. W. Reeves
F. B. Forbes		H. W. Young

PAST PRESIDENTS
OF THE
GEOLOGICAL AND MINING SOCIETY,
STANFORD SECTION

1892-1900.....	No record available
1900-1901.....	W. M. Parkin
1901-1902.....	E. H. Nutter
1902-1903.....	C. Naramore
1903-1904.....	H. R. Johnson, D. M. Folsom
1904-1905.....	F. W. Nobs
1905-1906.....	E. M. Gleim, R. B. Moran
1906-1907.....	F. B. Goudy, B. R. Saunders
1907-1908.....	C. B. Osborne
1908-1909.....	F. W. Turner
1909-1910.....	W. W. Adams, E. A. Melczer
1910-1911.....	B. E. Parsons
1911-1912.....	R. J. McCann, L. J. Taylor
1912-1913.....	E. B. Corbet
1913-1914.....	L. C. Decius, H. Stone

In Memoriam

WILLIAM BURTON BARBER, '02.

Born October 17, 1879.

Died May 4, 1905.

ARTHUR FREDERICK BURRIS.

Born December 7, 1889.

Died August, 1912.

DARELL CRANDELL, 1909-1912.

Born December 4, 1890.

Died March 31, 1913.

JAMES ARTHUR DIGGLES, 1891-1896.

Born August 10, 1871.

Died May 14, 1910.

RAYMOND SHELDON GARFIELD, '98.

Born December 18, 1873.

Died March 9, 1898.

HUGO EDMUND KRAMM, '09.

Born November 17, 1877.

Died January 11, 1913.

WALTER RUDOLF NOBS, 1909-1911.

Born May 21, 1890.

Died September, 1913.

EDMUND DAVIS NORTH, '02.

Born October 5, 1878.

Died June 22, 1910.

ERNEST YOUNGER POMEROY, '05.

Born February 12, 1882.

Died August, 1909.

JOHN HOWARD RUNYON, 1906-1909.

Born February 26, 1886.

Died 1910.

IRVING HENRY SEVIER, 1901-1904.

Born December 6, 1879.

Died September, 1904.

HERBERT SPENCER STARK, '94.

Born February 17, 1873.

Died February 18, 1910.

Review of the Year's Work

By Herbert Stone

At the beginning of the college year the society was somewhat depleted in numbers, as is usual each year, so that our first consideration was to get the faculty to recommend some men eligible for membership. Twelve good men were chosen from the ranks and duly elected, and in the following week, after a sumptuous feed, they were put through a very touching initiation which demonstrated that the choice was well made, for without exception they all proved to be possessed of good sound nerves. We were very fortunate in having a flying visit paid to us that evening by Dr. J. A. Holmes, director of the U. S. Bureau of Mines, who gave us a very interesting talk on the work which the bureau is doing and hopes to do in the future.

At the first two regular meetings Mr. Harold Hannibal gave an account of his geological work along the Pacific coast during which he made large and valuable collections of fossils and mapped the geology of a large stretch of country.

At the third meeting Professor C. F. Tolman gave an instructive account of the geology and ore deposits of Maimi, Arizona, upon which he is an authority.

The next meeting found us without a President, owing to Cort Decius having accepted a position with the Argentine Government, under "Big Bill" Pemberton '09, who is now Minister of Public Works in the Argentine Republic. The helm was left in the hands of the Vice President who guided the destinies of the Society for the remainder of the semester to the best of his ability.

At the following meeting Dr. J. A. Holmes, of the U. S. Bureau of Mines, and Mr. J. A. Taff, Chief Geologist for the Southern Pacific Railroad Co., were elected to honorary membership. Mr. Taff was invited to address the society at the next meeting, but, unfortunately, at the last moment he was unable to come, and very kindly arranged for Mr. Ben Parson, '10, to take his place, who gave a very interesting talk on his year's work in the oil fields.

The scene was changed to Brazil at the next meeting, when Dr. Branner gave a very memorable talk which was enlivened with his inimitable sparkling humor and anecdotes. That talk will be remem-

bered by all of us, not only for the sound practical advice and information that he gave us about Brazil, but for that glimpse into the humorous side of his character that was a revelation to many of the younger members who had not had the privilege of knowing him well.

The address at the next meeting carried us over to Japan, when Mr. H. Foster Bain, editor of the Mining and Scientific Press, gave us a very vivid account of his travels in that country and illustrated by means of maps and photographs the location and details of the coal, metal mining and smelting industries. He also gave us some very interesting facts about the management and economic aspects of low priced labor.

The above addresses, together with some short talks on mining by members of the society, filled out the program for the first semester. After each meeting a very appetizing feed was enjoyed by the members, which is a very popular and important social side of the work of the society in its aim to bring the members together closely in touch with each other.

At the commencement of the next semester we found that the secretary had not returned to college. A special election of officers resulted in Vice President Stone being elected president; W. G. Cooper, vice president; W. R. Longmire, secretary; C. M. Vrang, retaining his office as treasurer. Three new members were nominated and voted in later, and Mr. J. D. Clarke elected an honorary member.

Mr. A. H. Garner, '12, who had returned on leave from his work in Venezuela, told of his experiences in that country where there are myriad varieties of insects, every one of which stings or bites, and of his trip up the Orinoco river with H. E. Boyd, '12, in a dugout canoe while mapping the geology of the country.

At the next meeting Mr. F. W. Nobs, '05, gave a very vivid account of the difficulties of conducting mining operations in Nicaragua, where there are no roads over which machinery can be hauled, it having to be literally dragged over rough ground and brush by sometimes as many as sixty bulls, and where conditions are not improved by a rainfall of about two hundred inches a year. The labor conditions were also discussed at length and a good idea of the difficulties to be contended with in the employment of unskilled labor, to whom holidays appear more important than workdays.

A very successful department smoker was held on the 29th of January at the Alpha Tau Omega house, at which over seventy members

of the department faculty and students gathered to enjoy a good feed and social evening. Short talks were made by Dr. Branner, Dr. Smith and Professor Folsom, after which Tom Turner, '12, related some of his experiences while in Siberia. A clever exhibition of sleight of hand was given by Mr. Brooks, who was visiting on the campus.

Mr. W. H. Shockley of London addressed the next meeting and gave an account of an expedition he led into Siberia to prospect some gravel bars said to contain rich gold placer deposits. The party consisted of about seventy men and a small steamer was chartered for the trip. Many varied and interesting experiences were told of, and a series of excellent photographs gave a very clear idea of the country and natives living there.

At the next meeting Mr. Thomas B. Swift, superintendent of the Mountain Copper Co.'s smelter at Martinez, gave an account of the smelting operations and the manufacture of fertilizers and sulphuric acid as by-products. He illustrated his lecture by some characteristic specimens of ore and phosphate rock, which he afterwards donated to the University. One very interesting feature of his address was his account of the finding of metallic deposits of magnetite and what appears to be a copper sulphide in the country rock under the furnaces, which were presumably formed by vapors migrating through the solid firebrick bottom of the furnaces and being deposited in the shale below.

We always expect an interesting talk from Dr. J. P. Smith and we are never disappointed. He entertained us at the next meeting with a very practical talk on paleontology applied to economic geology, and gave us some interesting sidelights on the application of paleontology to the search for economic deposits, illustrating his points with some of his own experiences and those of several former Stanford men. His talk brought to mind that trite criticism of his lectures overheard recently, "Gee! J. P. can make any old roughneck just love them fossils."

At the last meeting before going to press Mr. Fred. W. Bradley, consulting engineer for the Alaska-Treadwell and other mines, gave some good advice as to the easiest and quickest way to win success in the mining world. By success he inferred the winning of a name as well as the winning of a competency. Short cuts to success were strongly condemned, but conscientious work, study and proper conduct were advocated as being the surest route. The moral that was strongly emphasized was to make connections and keep moving all the time.

Report of the General Secretary

By Harold Hannibal

On January 20 of the present year a special meeting of the Stanford Section was called by President Stone to adopt a new constitution in order to facilitate the organization of additional sections of the society. The principal innovation is the centralization of the administration of routine business by placing it in the hands of a general secretary, who holds office for two years, while the general secretary and presidents of the several chapters act as an executive council. Owing to the distance at which sections are located, the calling of a general meeting is made optional, and, in fact, until a number of sections are established, it seems unnecessary, since all the business liable to come up may be easily handled by letter.

As the first general secretary under the new constitution it has been my duty to arrange for the affiliation of the South Dakota School of Mines Section, which formally adopted the constitution February 21 with ten charter members.

I have also acknowledged a letter from W. R. Crane, secretary of the American Institute of Mining Engineers, regarding the present status and future plans of the society. For several years a loose affiliation has existed which the A. I. M. E. wishes to strengthen. It is hoped that this will enable members of the society to join the senior organization more readily, as well as be of mutual advantage to both in other ways.

A number of letters have been written to other societies or individuals at other schools inviting them to affiliate with us, and several favorable answers have been received.

Nearly every university, college, and school of mines of sufficient size has its one or more organizations designed to meet local needs and these may be as social or technical as the members desire. The plan of the G. M. S. A. U. is not to supersede a local organization, but to affiliate with it. The constitution does not permit any one section to have power over any other, but simply provides for a standard of admission and a plan of general organization, each section being free

to make its own by-laws, effect any sort of local organization that it desires, and govern itself according to its own dictates.

On the other hand, to the young fellow on the trail of a job, to the older man looking for an assistant, or to two men who meet casually at any time, membership in the G. M. S. A. U. gives status. In the first place membership is based on faculty recommendation, which, while the standard is not too high, is understood to include ability, industry and character; and secondly, on election by the members of his local section, which means he must be something of a mixer. Another and more concrete advantage, however, is the opportunity for each section to publish every year a directory at a comparatively small cost, a feature that judging by the popularity of the present publication, should appeal to every man now or at one time a member of any society of this nature.



**OFFICERS AND MEMBERS
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SOUTH DAKOTA SCHOOL OF MINES SECTION,
GEOLOGICAL AND MINING SOCIETY
OF AMERICAN UNIVERSITIES**

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Vice President	R. S. Hill
Secretary-Treasurer	W. J. McCauley

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R. B. Eldredge	W. J. McCauley
A. W. Fahrenwald	R. D. Meents
L. L. Farnham	W. C. Pryor
L. E. Fleishman	G. E. Stowell

SOUTH DAKOTA SCHOOL OF MINES SECTION

A new section of the Geological and Mining Society has just been inaugurated at the South Dakota School of Mines at Rapid City. We had hoped to have a picture of the charter members in this edition, but owing to the difference in the arrangement of the college year at the two schools correspondence has been somewhat delayed by vacations, and the members have not had time to get together sufficiently to get out a report. We understand, however, that they are a live bunch and will no doubt have a good report to make in the next year book. The members of Stanford Section wish them all success in the coming year and hope that the Pick and Nugget pin will always promote acquaintance and good friendship between the wearers wherever they may meet.

To the Alumni

By D. M. Folsom

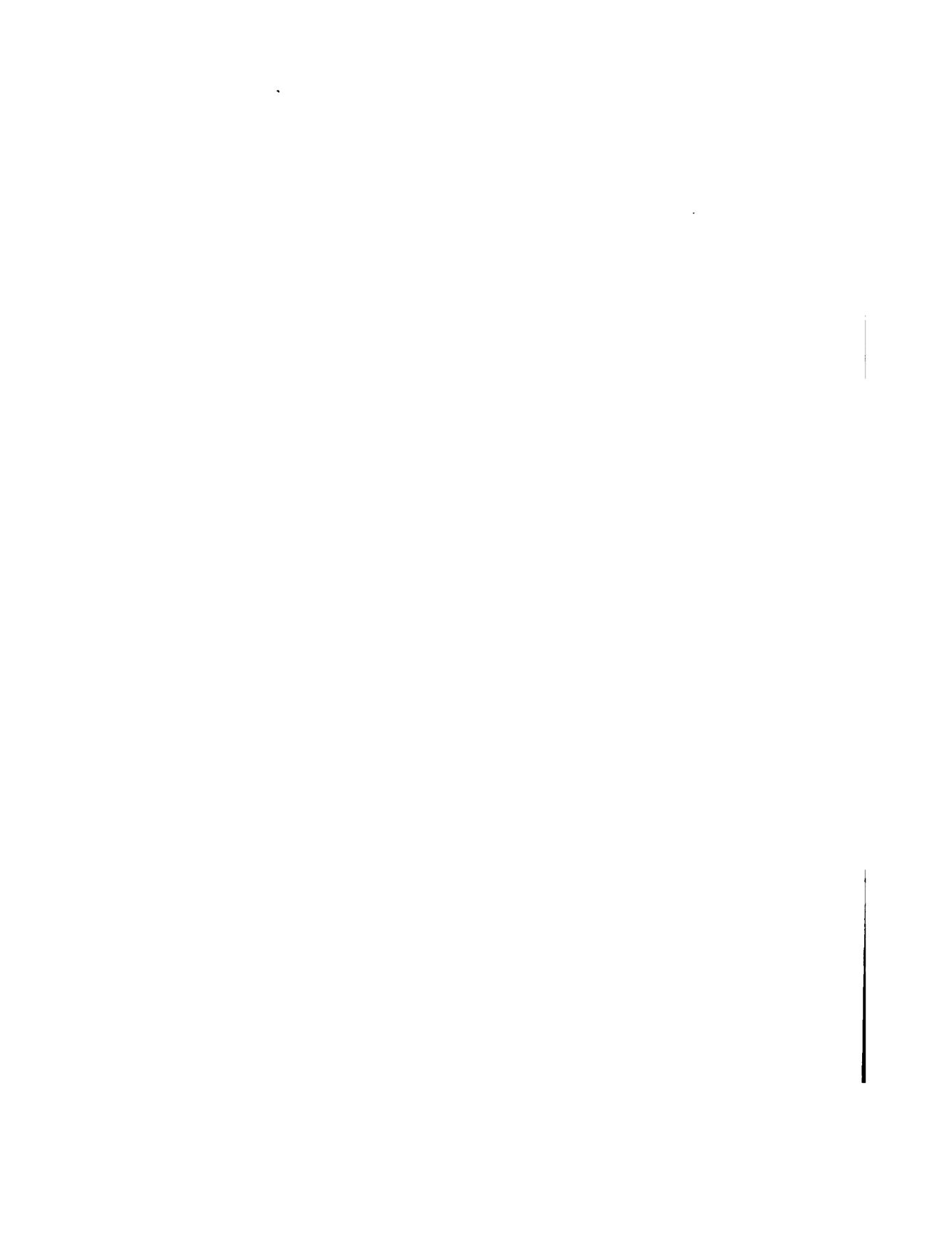
The alumni of Stanford often make the complaint that they are constantly called upon to help out undergraduate activities, and that the student body instead of being self-reliant look upon the body of the alumni as their natural support.

To a certain extent this is undoubtedly true—obviously more so than in the “old days” when there were no alumni, but is it anything more than natural that the alumni should keep alive their interest in Stanford by contributions of various sorts toward legitimate college enterprises?

In this year book the undergraduates of the Geology and Mining Department have tried to produce, with only nominal assistance from the alumni, something which would be of interest and benefit to all graduates and former students of the department who are actively engaged in the practice of their professions. In return they ask frankly that the alumni recognize the purpose of the book and get together not only within its pages, but in a spirit of co-operation with the graduates of another generation than their own, and with the students who are still struggling with the theoretical phases of geology, of mining, and of metallurgy.

It is hoped that this year book will become a permanent institution. Help out next year's number by sending to the secretary of the Geology and Mining Society notes of interesting work which you have done in the field, of new problems which you have solved, and of new regions which you have studied. In other words, help make this book an actual record of the progress of the Stanford geologists and engineers in new fields and along new lines in old districts.

And don't forget, as Dr. Branner puts it, that as you yourselves progress and step into positions of added responsibility, that there are Stanford men coming along down the line who would be glad of a chance to fill your old positions.





CYRUS FISHER TOLMAN

Some New Lines of Investigation now Being Carried on in the Laboratory of Economic Geology at the University

By C. F. Tolman

All outdoors is the laboratory of the geologist. Economic geology is but the practical application of geology in any of the various branches to business or engineering.

For this reason I shall not attempt even to mention the varied problems that are awaiting solution at the hands of the advanced students at Stanford University.

Confining our attention to the subject of ore deposits, the advance of knowledge during the last decade, from mere guesses as to how ores might be formed, to definite knowledge as to what has happened under a great variety of conditions, has been due to careful field study, assisted, of course, by the study of rock alterations by means of the microscope, and to a less degree by chemical investigations of ore formation.

We have sufficient geological data at hand to classify ores according to the depths at which they are formed, to recognize the differences in the groups of minerals formed at high, intermediate and moderate temperatures, to prove the relation of mineral belts to zones of structural weakness and igneous intrusion, to classify these zones, and determine their characteristic mineralization as well as to arrange their ore deposits into natural groups which show regular transition due chiefly to changing composition of the solutions and the temperatures at which they are formed; and finally to determine their geologic age.

While further field study will increase the data at hand, and make our conclusions more exact, it is perhaps too much to expect many new discoveries from field evidence alone.

Up to recently we have been in the peculiar position of being able to study about the sulphide ores and the changes in the rock adjacent to them, but not able to make a direct microscopic study of the opaque ores themselves. By grinding an apparently uninteresting

piece of sulphide ore to a true surface, and then developing a high polish, and examining it by the reflecting microscope, long used by the metallurgist, we can distinguish the component sulphides, and even, in cases, follow the transformation of the ore from one sulphide to another. While the structure, such as intergrowths, the order of the formation of the minerals, etc., is depicted in the polished mirror, the determination of the many minerals thus shown is not yet perfected, but we hope to have a satisfactory and simple method of procedure worked out shortly.

This work is now receiving the attention of a number of investigators, and I believe is opening up a new field in the study of ore deposits, and upon the solution of the problems presented we may hope to register an important advance in the science.

It is hardly necessary to suggest to Stanford geologists and mining engineers that we would establish the facts and make our deductions therefrom in a scientific manner without regard to the so-called practical value of the same, and if this has been done properly the application becomes evident.

Examples of such applications may be cited in the recent work done on titaniferous iron ores. It was found that titaniferous magnetite varied greatly in the amounts of titanium that could be separated from the ore by magnetic concentration. Polished sections explained this difference, showing that in some ores the titanium was present in separate crystals of titanite and in other cases the titanite crystals were absent and the magnetite itself was titaniferous.

In another case a large outcrop of hematite and limonite had been prospected for copper, and a good grade of copper ore had been encountered just below the gossan. These sulphides were examined by the writer, and in the hand specimens the ore appeared to be thoroughly blackened and to have undergone considerable secondary enrichment. Upon examination of polished surfaces, however, it was found that the enrichment was only a superficial coating, and the larger portion of the ore was primary chalcopyrite which could be expected to hold its copper content as far down as the ore might continue.

At present our equipment for this work consists of two microscopes fitted with very satisfactory new Leitz illuminator and a binocular microscope with vertical illuminator. In addition we have ordered the complete new Leitz metallographic and photographic mi-

croscope, which appears to be the best instrument of this type made. For laboratory material we have a very complete collection of ores and country rock from the extensive and complicated ore deposits at Butte, in part donated by the geological department of the Anaconda Mining Co. and in part collected by Mr. Ray; several complete collections of ores and rocks from the copper deposits of Arizona; and a large amount of material that has been sent in to the Department of Geology at various times by Stanford graduates, the most valuable of which is a collection of ores and rocks from the mines of West Australia donated by Mrs. Hoover.

Complete geological knowledge of ore deposits cannot be obtained by a single line of attack, but only by the co-ordinating of all the data available. We need samples of all the types of ores and of the fresh and altered country rock in which the ores occur, taken at different depths. Also geological maps and sketches showing both the geological structure and the structure of the ore deposit, on which the location of the samples is noted. If Stanford men will send in samples and as much of this data as is available, this material will be of great value in our study of ore deposits.



Gems from Geology 1

(Not included in the syllabus.)*

Serpentine is a green, soft, slippery rock; one that has the landslides.

The main cause of landslides is rainfall, this may be prevented by planting trees.

Denudation is a moving off the earth to a lower level.

Method of estimating rate of denudation: the amount of silt per minute found in a gallon of water, multiplied by the velocity of the average cross-section * * *.

An unconformity shows the placing of beds uncomfortably on one another.

An epicenter is the point where the shock comes out.

Ice-worn rocks have streaks in them showing in which direction the ice flew.

A wave-worn boulder is sometimes protected by moses (mosses) so that the water cannot attack it.

A monocline is an up and down position or the coming together of strata from different directions.

Actions causing faults are in two directions, towards the fault pushes the fault up, while away from the fault lets the fault down.

Animal life in the form of aunts in the tropics is greater than would be supposed.

Basaltic columns are formed by the evaporation of lakes in regions of igneous rocks.

A "joint" is when rocks have been broken and sealed together again, making them as strong as ever.

***Culled from examination papers.**



H. C. HOOVER, '95

World Honors to Mr. and Mrs. Hoover

W. A. Nelson

Mr. Herbert C. Hoover, '95, and Mrs. Lou Henry Hoover, '98, graduates of Stanford University, were jointly awarded the first annual gold medal of the Mining and Metallurgical Society of America, at its annual meeting on January 13th, 1914. The medal was awarded for "distinguished contributions to the literature of mining," and was voted to Mr. and Mrs. Hoover in recognition of the great work they had together accomplished in translating into English the mediaeval Latin treatise "De Re Metallica" by Georgius Agricola—otherwise George Bauer. This treatise was published in 1556 and for nearly two centuries was the standard work on geology and mining, but as it was written in broken-down mediaeval Latin and contained many technical words coined by Agricola, its general usefulness was impaired. Its translation had been repeatedly attempted but given up as impossible, requiring as it did, an accurate knowledge of geology and mining as well as Latin. Consequently the benefit bestowed on the mining world by Mr. and Mrs. Hoover's clear translation of the work into pure English is very great, and is increased by the copious and valuable footnotes, which constitute practically a history of mining and metallurgy from earliest times.

This work, which is a quarto volume bound in vellum, is of the size and type of the original, but much thicker. It is dedicated to Dr. John C. Branner, President of Stanford University, and is a testimonial of which he may be proud. A copy of it is placed in Stanford University library.

The medal was designed by Tiffany of New York, and depicts on the face a female figure breaking through a mass of rock, holding in her hand a crystal representing truth, and on the obverse side a laurel branch in relief, the names of the recipients, and the legend "Awarded for distinguished service," with the date. The medal was presented to Mr. and Mrs. Hoover on the occasion of a banquet given in their honor by the society at the Biltmore Hotel, New York, on March 9th, 1914.

A very apt and unique souvenir of the occasion was prepared by the dinner committee, consisting of a pamphlet comprising reproductions of some of the engravings in "De Re Metallica," with captions applying them to Mr. and Mrs. Hoover, and also an engraving of the medal.

"Coming Events Cast Their Shadows Before Them."

This is a facsimile of the "shadow" that has been sent to the Alumni:

TO THE FORMER STUDENTS OF THE STANFORD GEOLOGICAL DEPARTMENT:

HOW would you like to once again hike over the hills back of the University with your hammer in your hand and J. P. offering a smoke to the one who finds the first fossil? and how

WOULD you like to sit around a big camp fire in the evening and eat beans off a tin plate and swap stories with the other fellows who, like you, have been hammering for the rocks out in the cold, cold world?

YOU are going to have a chance to do this and also to again turn in on the hard cold ground after the obsequies are over and gaze up at the stars through an odor of tar weed and tobacco smoke, and

LIKE old times you may be awakened occasionally by a dash of cold water, or the sound of Johnson's sleeping bag rolling down hill, or Kimball and Purdue drawing straws to see who shall sleep in the middle, or Jackson stepping into the basket of eggs.

THIS is what we want you to do: Get your blankets and field clothes ready and meet us at 2 P. M., May 16, 1914, at the Geology Building, on the Campus, where the start will be made for the hills to the

FIRST REUNION OF THE GEOLOGICAL DEPARTMENT.

You will have to walk out, but the committee will provide eatables and will furnish team to take out blankets. Kindly advise the secretary of the committee whether you can be there so that proper provisions can be made.

J. F. NEWSOM, '92
H. C. HOOVER, '95
E. B. KIMBALL, '95
J. B. RICE, '97
RALPH ARNOLD, '99
D. M. FOLSOM, '02

R. S. V. P.

W. A. WILLIAMS, '03
R. B. MORAN, '07
J. H. MENKE, Jr., '10
J. E. ELLIOTT, '12
A. W. AMBROSE, '13
W. R. HAMILTON, '04, Sec'y,
433 California Street,
San Francisco, Cal.

And it's going to be *some* event.

DIRECTORY

of members of the Geology and Mining Department registered for more than one year, arranged in the following order: Name (Alumni in small caps), degrees and date conferred, permanent or home address, positions held and dates, present position and business address. The asterick (*) indicates membership in the Geology and Mining Society; dagger (†) deceased; (m) married.

Adams, Sidney Francis: 1913—
Stanford University, California.
Student, Geology and Mining, Stanford University.

*ADAMS, WILLIAM WELSH: A. B. Geology and Mining, 1910.
Los Angeles, California.
President, Stanford Section G. M. S. A. U., 1909.
Engineer, Santa Gertrudes Mining Co., Pachuca, Hidalgo, Mexico, 1910—

*AINSWORTH, HOWARD DEARBORN: (m) A. B. Geology and Mining, 1912.
P. O. Box 157, Dundee, Oregon.
Fruit Grower, 1912—

ALLAN, LEIGH: (m) A. B. Geology and Mining, 1899; B. S. McGill University, 1900;
1214 North Prospect Street, Tacoma, Washington.
Assistant Engineer, Northwestern Improvement Co., Roslyn, Washington;
Assistant Engineer, Oregon Short Line and Union Pacific Railroad, Salt Lake City, Utah;
Resident Engineer, Nisqually Power Plant, Tacoma, Washington.

Allan, Chester Boyce: 1900-1905.

Alston, Joseph Wade: 1899-1901.

Alvarado, John Bolton: 1900-1903.

*AMBROSE, ARTHUR WARREN: A. B. Geology, 1913.
Stanford University, California.
Student Adviser, Stanford University, 1914—
Graduate Student Geology, Stanford University, 1914—

*ANDERSON, FRANK M.: (m), A. B. Geology, 1895; M. S. University of California,
1897.
2604 Etna Street, Berkeley, California.
Geologist, State Mining Bureau, San Francisco, 1899-1901;
Geologist, Southern Pacific Railroad Co., 1902-1912;
Curator, Geology and Palaeontology, California Academy of Science, 1905—
Consulting Geologist, 1912—

*ANDERSON, IRVING: (m) A. B. Geology and Mining, 1903.
Wallace, Idaho.
Consulting Mining Engineer.

*ANDERSON, ROBERT EDWIN: A. B. Geology and Mining, 1913.
San Francisco, California.
Graduate Student Geology and Mining, Stanford University.

ANDERSON, ROBERT VAN VLECK: A. B. Geology, 1906.
7 Richmond Terrace, Whitehall, London S. W., England.
Cable address: "Robanders" London.
Zoological and Geological Expedition to Japan, 1905;
Field Assistant and Geologic Aid, U. S. Geological Survey, 1906-1909;
Assistant Geologist, U. S. Geological Survey, 1909-1911.
Geologist in charge of Petroleum investigation in California, U. S. Geological Survey,
1911-1913.
Consulting Petroleum Engineer, 1913—

*ANDREEN, HARRY MAYO: A. B. Geology and Mining, 1913.
Woodside, California.
Assistant Assayer, Alaska-Treadwell Gold Mining Co., Treadwell, Alaska, 1913—

*ANDRESEN, LUDWIG PAUL: (m) A. B. Geology and Mining, 1912.
1264 Hawthorne Avenue, Portland, Oregon.
Geologist, Caribbean Petroleum Co., Caracas, Venezuela, 1913-1914;
Engineer with Guggenheim Exploration Co., Dawson, Alaska, 1914—

*ARNOLD, RALPH: (m) A. B. Geology, 1899; A. M. Geology, 1900; Ph. D., 1902.
 70 Orange Grove Boulevard, Pasadena, California.
 Cable address, "Ralfarnoil" (Bedford-McNeil Code).
 General President, G. M. S. A. U., 1902-1913;
 Assistant Geologist, Stanford, 1899-1902;
 Field Assistant, Washington School Mines Mining Survey, 1900;
 Field Assistant and Geological Aid, U. S. Geological Survey, 1900-1905;
 Palaeontologist, U. S. Geological Survey, 1905-1908;
 Geologist, U. S. Geological Survey, 1908-1909;
 Assistant Geologist, U. S. Geological Survey, 1909-1911;
 Geologist and Consulting Petroleum Engineer,
 921 Union Oil Building, Los Angeles, California.

*ARRELL, DELL BERNIE: A. B. Geology, 1912.
 Geologist, Caribbean Petroleum Co., Venezuela, 1912-1914;
 Petroleum Geologist, Taft, California, 1914—

*ASHLEY, GEORGE HALL: (m) M. E. Cornell, 1899; A. M. Geology, Stanford, 1892;
 Ph. D., 1894.
 1865 Park Road, N.W., Washington, D. C.
 Assistant Geologist, Arkansas State Survey, 1891-1893.
 Assistant State Geologist, Indiana, 1896-1900;
 Professor of Geology and Biology, College of Charleston, South Carolina, 1900-1903;
 With U. S. Geological Survey, 1900-1905; 1911-1913;
 State Geologist, Tennessee, 1905-1911;
 Assistant Director U. S. Geological Survey, 1913—

*Austin, Edwin Alonzo: (m) 1901-1903; 1904-1906.
 Engineer with Guggenheim Exploration Co., Iditarod, Alaska, 1906—

*AVERY, PAUL W.: (m) A. B. Chemistry, 1905; A. M. Chemistry, 1906.
 Assistant in Assaying, Stanford University, 1905-1906;
 Chief Chemist, Esperanza Mine, El Oro, Mexico, 1906.

*BAHNEY, LUTHER WILLIAM: (m) Ph. G. California, 1897; E. M., Metallurgy,
 Stanford, 1911.
 Yale University, New Haven, Connecticut.
 Instructor, Chemistry and Microscopy, Department of Pharmacy, University of California,
 1898-1900;
 Sampler, Copper King Mining Co., 1900-1901;
 Chemist and Chief Assayer, Selby Smelting and Lead Co., 1902-1906;
 Manager, Xitinga Mines, Mexico, 1906;
 Assistant Professor, Metallurgy, Stanford University, 1907-1911;
 Professor Metallurgy, Yale, 1911—

*BAKER, THOMAS CHILDREY: A. B. Geology and Mining, 1910.
 1616 South Vine Street, Hollywood, California.
 Superintendent, Santa Gertrude Mining Co., Pachuca, Hidalgo, Mexico, 1910—
 Baldwin, Leroy Kingsley: 1900-1902.

*†BARBER, WILLIAM BURTON: A. B. Geology and Mining, 1902; d. May 4, 1905.
 Geologist, State Mining Bureau, San Francisco, 1902;
 Assistant Superintendent, Eureka Quicksilver Mine, 1903-1905.

Barker, William Cyrus: 1900-1902.

Bartell, Max John: (m) 1901-1905.
 Engineer, Bay Cities Water Co., 1904;
 Engineer, Noble Electric Steel Co., Herolt, California, 1909-1910;
 Civil Engineer, San Francisco.

Barton, Millar Dodge: 1912—
 Los Angeles, California.
 Student, Geology and Mining, Stanford University.

Bassett, Thomas E.: 1913—
 332 Channing Avenue, Palo Alto, California.
 Student, Geology and Mining, Stanford University.

Bayly, George Harold: 1909-1912.

*BEAL, CARL HUGH: (m) A. B. Geology, 1913.
 940 West 21st Street, Los Angeles, California.
 Field Geologist, Kern Trading and Oil Co., Coalinga, 1913;
 Geologist with Harry Johnson, 805 H. W. Hellman Building, Los Angeles, 1913—

***BECKWITH, HENRY TRUMAN**: A. B. Geology and Mining, 1908.
 370 Bullitt Building, Philadelphia, Pennsylvania.
 Mining Engineer.
 Field Engineer, Commonwealth Exploration Co., Philadelphia, Pa., 1908-1912;
 Assistant Geologist, Stanford University, California, 1912-1913;
 Field Geologist and Surveyor with F. M. Anderson, Texas, 1913—
 2415 Ninth Street, Wichita Falls, Texas.

Beebe, Henry Clare: 1912—
 Ashland, Oregon.
 Student, Geology and Mining, Stanford University.

***Beeson, Joseph Josiah**: 1912—
 Los Angeles, California.
 Student, Geology and Mining, Stanford University.

***BELL, HARRY WESLEY**: A. B. Geology and Mining, 1906.
 Healdsburg, California.
 Assayer, Valcada Mining Co., Silver Peak, Nevada;
 Assistant Assayer, Tonopah Mining Co., Tonopah, Nevada;
 Assayer, Electrician, and Refiner, Nevada Reduction Co.;
 Millman, Goldfield Consolidated Mill Co.;
 Engineer, Esperanza Oil Co., Coalinga, 1912-1913;
 Engineer, General Petroleum Co., Coalinga, 1913—

***BELL, HENRY HERMAN**: A. B. Geology and Mining, 1900.
 708 J Street, Eureka, California.
 Engineer with British Columbia Copper Co., Greenwood, British Columbia, 1912—
and 1913
Bell, John Henry: 1904-1906; 1907-1909. *Plymouth, Alameda Co., Cal.*

Betterton, Cherrill Roach: 1913—
 818 Roanoke Street, Seattle, Washington.
 Student, Geology and Mining, Stanford University.

Birmingham, James Everet: Geology, 1904-1906.

Blake, George Albert: Geology, 1907-1909.

Blake, William Horton: Geology and Mining, 1901-1904.

Bonnett, William Henry: 1913—
 1418 South Lime Street, Riverside, California.
 Student, Geology and Mining, Stanford University.

Bontz, Conrad Kauffman: 1913—
 356 Coleridge Street, Palo Alto, California.
 Student, Geology and Mining, Stanford University.

***BOUNDEY, ELWIN JAMES**: A. B. Geology, 1911.
 194 Moorpark Avenue, San Jose, California.
 Fruit Grower, San Jose, 1911-1913.

***Boyd, HAROLD EDWARD**: A. B. Geology and Mining, 1912.
 Milpitas, California.
 Geologist with Caribbean Petroleum Co., Venezuela, 1912—
 Care L. J. Proctor, Box 387, Caracas, Venezuela.

Boyle, Harry: 1899-1905.

Bradley, Frank Foster: 1898-1901.

BRADLEY, OLIVER URIEL: A. B. Geology and Mining, 1904.
 1024 Denver Avenue, Muskogee, Oklahoma.
 Engineer and Assistant Manager, Ohio-Tonopah Mining Co.;
 Assistant Superintendent and Engineer, Ruth Pierce Mining Co., Mariposa County, 1907-
 1909;
 Civil and Mining Engineering work;
 Bureau of Mines, Pittsburg, Pennsylvania.
 725 Flynn-Ames Building, Muskogee, Oklahoma.

***BRALY, NORMAN BLYTHE**: A. B. Geology and Mining, 1905.
 845 West Silver Street, Butte, Montana.
 Engineer, North Butte Mining Co.;
 Superintendent, Rainbow Development Co., Butte, Montana.

***BRANNER, JOHN CASPER**: (m) B. S. Cornell, 1882; Ph. D. Indiana, 1885; LL. D. Arkansas, 1897.
 13 Alvarado Row, Stanford.
 Assistant Geologist, Imperial Geological Survey of Brazil, 1875-1878;
 Special Botanist in South America, 1880-1881;
 Special Agent of the U. S. Department of Agriculture, 1882-1883;
 Topographic Geologist of the Geological Survey of Pennsylvania, 1883-1885;
 Professor of Geology, Indiana University, 1885-1891;
 State Geologist of Arkansas, 1887-1892;
 President, Geological Society of America, 1904—
 Member California Earthquake Investigation Commission, 1906-1907;
 Special Assistant, Geological Survey of Brazil, 1907-1909;
 Vice President and Professor of Geology at Stanford University, 1891-1912;
 President, Stanford University, 1913—

Branner, John Kennedy: 1905-1908.
 505 West 112th Street, New York.
 Architect.

Briggs, Otis Emmons: 1913—
 Orange, California.
 Student, Geology and Mining, Stanford University.

Brotherton, Theodore Willard: 1899-1903.

***BRYAN, BARNABAS**: A. B. Geology and Mining, 1909.
 Anacostia, District of Columbia.
 Mining Engineer, Poderosa Mining Co., Callahuasi, Chili;
 Geologist, Caribbean Tin Co., Venezuela, 1912—
 Care L. J. Proctor, Box 387, Caracas, Venezuela.

***BUCK, RUFUS**: A. B. Geology and Mining, 1895.
 Care H. F. Norton, 210 Third Avenue, South, Seattle, Washington
 Chief Engineer, Yukon Construction Co., 1905;
 Superintendent Construction, Seattle Lighting Plant, 1907;
 Assistant Engineer, Cedar River Water Supply Service, Seattle, Washington, 1914
 Civil and Mining Engineer and Contractor Hydraulic Mining Examinations.

***Burcham, William David**: 1905-1910.
 Mill Superintendent, Presidio Mining Co., Shafter, Texas, 1910—

***BURGREN, ARTHUR WILLIAM**: (m) A. B. Geology and Mining, 1910.
 Care Albert W. Burgren, 443 Holbrook Building, San Francisco, California.
 American Smelting and Refining Co., Dolores Mines, Matehuala, San Luis Potosi, Mexico.
 Chief Engineer, Dolores Mines and Colrizo Mines, American Smelting and Refining Co., 1912-1913.

Burmister, Howard Coles: 1897-1899.

***Burrell, Logan**: 1906-1912.
 505 East 20th Street, North, Portland, Oregon.
 With Pacific Gas and Electric Co., San Francisco, 1912-1913;
 With London and Lancashire Guaranty and Accident Co., 1913—
 Millman, La Leoness Mill, Matagalpa, Nicaragua, 1914—

†**Burris, Arthur Frederick**: 1910-1912. d. August, 1912.

***BURTT, PAYSON DODGE**: A. B. Geology and Mining, 1909.
 369 Lester Avenue, Oakland, California.
 Cable address: "Payburt," San Francisco.
 United States Mineral Surveyor, Placerville, California.
 1305 Humboldt Bank Building, San Francisco, California.

Bush, Harry Edward: (m) 1901-1904.
 Assayer, Afterthought Mining Co., Shasta County, 1905-1907;
 Engineer, Nevada-Douglas Copper Co., Yerrington, Nevada.

Cameron, Harry Frank: 1897-1900.

***Carey, Everett Pascoe**: (m) A. B. Mt. Anderson University, New Brunswick, 1892; A. B. Harvard, 1893; B. S. Harvard, 1894; Graduate, Geology, Stanford, 1901-1902.
 Professor Geology, University of Pacific, 1903-1904;
 Professor Physiography, San Jose High School, 1904;
 Professor Physiography, Mission High School, 1908-1910;
 Professor Physiography, Lowell High School, San Francisco, California, 1910—

***Carlton, Dave Pierce**: 1911—
 Riverside, California.
 Student, Geology and Mining, Stanford University.

Carroll, Daniel Brendan: 1913—
 Arncliffe, Sydney, New South Wales, Australia.
 Cable address: "Rugby," Sydney, Australia.
 Student, Geology and Mining, Stanford University.

Case, Paul Julian St. John: Ph. D. Iowa College, 1902; Stanford, 1902-1905.

***CASHBAUGH, WILLIAM AUGUSTUS**: A. B. Geology and Mining, 1910.
 Bishop, Inyo County, California.

***CHAMBERLIN, ALLEN MORTIMER**: A. B. Geology and Mining, 1907.
 San Jose, California.
 Engineer, Trinity Copper Co., California, 1907;
 Foreman, Duplex Cyanide Plant, Nevada, 1907;
 Mill Foreman, Sagamore Hill Mining Co., California, 1908;
 Chief Engineer, Poderosa Mining Co., Ltd., 1909-1910;
 With the Ferro-Carril de Antofagasta, Bolivia, 1910—
 Care Ferro-Carril de Antofagasta, Bolivia, Oxuro, Bolivia.

***CHANDLER, CLAYTON ISAAC**: A. B. Geology and Mining, 1908.
 Box 1302, Fresno, California.
 Farmer, Orland, Glenn County, California.

***CHANDLER, HOWARD HIRAM**: A. B. Geology and Mining, 1906.
 Cyanide Manager and Assayer, King of Arizona Mining Co., 1906-1908;
 With Black Mountain Mining Co., Sonora, Mexico, 1907;
 Fruitgrower, Exeter, California.

Chapin, Harold Addison: 1912—
 716 Emory Street, San Jose, California.
 Student, Geology and Mining, Stanford University.

***CHAPIN, THEODORE**: B. S. Occidental College, 1908; A. M. Geology, Stanford, 1913.
 Geological Aid, U. S. Geological Survey, 1910—
 U. S. Geological Survey, Washington, D. C.

Chase, Elmer Ellsworth, Jr.: 1907-1910.

***CHEDA, GILBERT ERNEST**: A. B. Geology and Mining, 1912.
 San Luis Obispo, California.
 Mill Foreman, La Leonesa Mill, Matagalpa, Nicaragua, Central America, 1912—

***CHEDA, HENRY PROSPER**: A. B. Geology and Mining, 1912.
 San Luis Obispo, California.

***CHRISTY, FRED CHASE**: (m) A. B. Geology and Mining, 1906.
 914 North Second Street, Phoenix, Arizona.
 Teller, Valley Bank, Phoenix, Arizona.

Church, Lenoir Campbell: 1897-1899; 1901-1903.
 Assistant Superintendent of placer mine, Nome, Alaska, 1899-1901;
 Superintendent of zinc mine, Arkansas, 1903-1905.

Clack, George Sidney: 1902-1904.

***Clark, Douglas**: 1909—
 Menlo Park, California.
 Student, Geology and Mining, Stanford University.

Clark, James P., Jr.: 1913—
 Little Rock, Arkansas.
 Student, Geology and Mining, Stanford University.

***CLARK, WILLIAM OTTERBEIN**: A. B. Union Christian College, 1899; A. B. Geology, Stanford, 1906.
 904 Cowper Street, Palo Alto, California.
 Acting Professor of Geology, State College of Washington, 1906-1907;
 Teacher of Geology and Physiography, Milwaukee Normal School, 1907-1912;
 Hydrographic Engineer with U. S. Geological Survey, 1912—
 Graduate Student, Stanford University, 1914—

*CLEVENGER, GALEN HOWELL: (m) B. S. South Dakota School of Mines, 1901; A. M. Columbia, 1903; E. M. Stanford, 1906.
 381 Hawthorne Avenue, Palo Alto California.
 Superintendent and Proprietor, Tailings Plant, Operating Cyanide Process, Rapid City, South Dakota, 1889-1901;
 Assayer and Chemist, Dakota Mining Co., Deadwood, South Dakota, 1901-1902;
 Research Metallurgist, National Smelting Co., Rapid City, and Horseshoe Mining Co., Terry, South Dakota, 1903-1904;
 Special Assistant, U. S. Geological Survey, in charge Electric Smelting Experiments, Portland, Oregon, 1904-1905.
 Consulting Metallurgical Engineer for companies operating in United States, Mexico and Central America;
 Special Study of Hydro-Metallurgical Methods in Mexico, 1906-1909;
 At Stanford, 1904-1906;
 Assistant Professor Metallurgy, Stanford University, 1909-1910;
 Associate Professor, 1910—

*CLOWE, CHARLES EDWARD: A. B. Geology and Mining, 1913.
 Woodland, California.
 Petroleum Geologist, Care Montebello Oil Company, Fillmore, California, 1914—

*CLUTE, WALKER STILLWELL: 1912—
 Los Angeles, California.
 Student, Geology and Mining, Stanford University.

Cobb, William Louis: 1895-1897.

*CODE, THOMAS KIMBALL: (m) A. B. Geology and Mining, 1896.
 896 Chestnut Street, San Francisco, California.
 Assayer, Utica Mine, 1896;
 Superintendent, Manzanita Mine, Ellen Winton Gold Zone Mining Co.;
 Superintendent, Empire Mine, Cumberland Mining Co.;
 Superintendent, Ocean Star Mine;
 Consulting Engineer, Dutton Copper Co., Alaska;
 Engineer with F. M. Bradley, Chronicle Building, San Francisco.

*COE, HARRISON STREETGA: (m) A. B. Geology and Mining, 1903.
 381 Lincoln Avenue, Palo Alto, California.
 Cable address: "Coe," San Juan del Sur, Nicaragua.
 Geologist, Anglo-Continental Gold Syndicate, Limited, Mexico;
 Manager, La Leonessa Mine, Matagalpa, Nicaragua, 1913—

Cole, Frank Lorenzo: 1891-1893.
 Manila, Philippine Islands.
 Mining Engineer.

Coleman, Alfred Henry: 1913—
 315 South L Street, Tacoma, Washington.
 Student, Geology and Mining, Stanford University.

Collins, Ray Merril: 1897-1898.
 South America.

Collins, Wallace Chase: 1908-1910.

Collis, William Edward, Jr.: 1907-1909.

*COLLOM, ROY EDWARD: A. B. Geology and Mining, 1906.
 Box 308, Coalinga, California.
 With Vanadium Alloys Co., Newmire, Colorado.
 Petroleum Engineer, Coalinga, California, 1912—

*COOPER, WARREN GOSSELIN: 1907—
 928 Fourth Street, Eureka, California.
 Student, Geology, Stanford University;
 Assistant, Mineralogy, Stanford, 1912—

Cope, Elmo Clifton: 1904-1907.

*CORBET, EDWARD BURKE: A. B. Geology and Mining, 1913.
 2650 Scott Street, San Francisco, California.
 President Stanford Section, G. M. S. A. U. 1912-1913;
 Mining Engineer (oil and placer).

Cozzens, William Floyd: 1902-1906.

*CRANDALL, BERTON WOODFORD: (m) A. B. Chemistry, 1907.
 Hamilton Avenue, Palo Alto, California.
 Assistant in Assaying, Stanford University, 1906-1907;
 Assayer, Peyton Chemical Works, 1907-1908;
 In business, Robinson & Crandall, Photo Supplies, 1908—
 124 University Avenue, Palo Alto, California.

†CRANDALL, DARRELL: 1909-1912; d. March 31, 1913.

*CRANDALL, RODERIC: A. B. Geology and Mining, 1906; A. M. 1907.
 Palo Alto, California.
 First Engineer of the "Servico Geologico e Mineralogico" of Brazil, 1908-1914.

CRESSY, CALVIN JOY: 1902-1904.

*CROOK, WELTON JOSEPH: (m) A. B. Metallurgy, 1911.
 Rapid City, South Dakota.
 Chemist, Pacific Coast Steel Co., South San Francisco, 1911-1913;
 Professor Metallurgy, State School of Mines, Rapid City, South Dakota, 1913—

Cullen, Thomas Joseph: 1913—
 Gilroy, California.
 Student, Geology and Mining, Stanford University.

Davidson, Elliott Emerson: 1913—
 Palo Alto, California.
 Student, Geology and Mining, Stanford University.

*DAVIS, CHARLES HOLLISTER: (m) A. B. Yale, 1910; A. M. Geology, Stanford, 1912.
 Waterbury, Connecticut.
 Metallographic Expert, Waterbury, Connecticut.

*DECUS, LOUIS COURNEY: A. B. Geology, 1913.
 Los Angeles, California.
 President Stanford Section G. M. S. A. U., 1913;
 Geologist, Geological Survey of Argentine Republic, 1913—
 Care Ricardo Dowdall, 248 Calle Florida, Buenos Aires, Argentine Republic, South America.

Dennis, Horton Thompson: 1905-1908.

Denton, Arthur Peebles: 1899-1901.

*DIETRICH, WALDEMAR FENN: (m) A. B. Geology and Mining, 1913.
 576 Mission Street, San Francisco, California.
 Instructor, Mining, Stanford University, California, 1914—
 Kingsley Avenue, Palo Alto, California.

†Diggles, James Arthur: (m) 1891-1896; d. May 14, 1910.

Dodd, Harold Valby: 1905-1908.

*DODD, ROBERT WILLIAM: (m) A. B. Chemistry, 1903; A. M. Chemistry, 1904.
 1052 Sanchez Street, San Francisco, California.
 Assistant in Assaying, Stanford University, 1902-1904;
 Instructor, General and Applied Chemistry, Cogswell Polytechnic College, San Francisco.

Doheny, Edward Lawrence: 1911-1913.

*DOLE, ALFRED ROWELL: A. B. Geology and Mining, 1903.
 Hammonton, Yuba County, California.
 Mining Engineer, with Yuba Consolidated Gold Fields, Hammonton, Yuba County, California.

de Dombrowski, Bronislaw: 1913—
 71 Grand Prospect, St. Petersburg, Russia.
 Student, Geology and Mining, Stanford University.

Dragon, Paul Louis: 1904-1906.

DRAKE, NOAH FIELDS: (m) C. E. Arkansas, 1888; A. B. Geology, Stanford, 1894;
 A. M. 1895; Ph. D. 1897.
 Fayetteville, Arkansas.
 Assistant Geologist, Arkansas Geological Survey, 1887;
 Assistant Geologist, Texas Geological Survey, 1889-1893;
 Assistant Topographer and Assistant Geologist, U. S. Geological Survey, 1894, 1897;
 Engineer, Public Works Department, Tientsin Provisional Government, 1900-1901;
 Secretary and Manager, Tientsin Land Investment Co., Limited, 1901-1902;
 Consulting Geologist, American-China Development Co., 1902-1904;
 Professor Geology and Mining, Imperial Pei Yang University, Tientsin, China, 1898-1900;
 Professor, Geology and Mining, Pei Yang University, 1905-1911;
 Associate Professor, Geology, Stanford University, 1911-1912;
 Professor, Geology and Mining, University of Arkansas, Fayetteville, Arkansas, 1912—

Dubendorf, Horace Hayes: 1912—
 801 Waverley Street, Palo Alto, California.
 Student, Geology and Mining, Stanford University.

Dunlap, Willard Everett: 1912—
 Humley Apartments, Los Angeles, California.
 Student, Geology and Mining, Stanford University.

*Ehrich, Walter Louis: 1899-1900.
 New York.
 Ehrich Art Galleries.

*ELLIOTT, JOHN ELBERT: (m) A. B. Geology and Mining, 1912.
 776 Page Street, San Francisco, California.
 Geologist with Caribbean Petroleum Co. in Venezuela, 1912-1914;
 Petroleum Geologist, Security Building, 340 Sansome Street, San Francisco, California.

Ellis, Sidney Hemenway: 1909-1911.

*ERB, BENJAMIN EDWARD: A. B. Geology and Mining, 1913.
 Chemainus, British Columbia.
 Alaska Consolidated Mines Co., Juneau, Alaska, 1913—

Fay, James Archer, 1899-1903.
 Engineer, Chicago, Milwaukee and St. Paul Railroad, 1907-1912;
 Fruitgrower, Anaheim, California, 1912—

*FERGUSON, ROY NOBLE: (m) A. B. Geology and Mining, 1907.
 339 North Third Street, San Jose, California.
 Assayer with A. M. Strong, Bishop, 1907;
 Petroleum Geologist, 1907—
 Friant, Fresno County, California.

*FOLSOM, DAVID MORRILL: (m) A. B. Geology and Mining, 1902; M. E. 1904.
 320 Embarcadero Road, Palo Alto, California.
 President Stanford Section G. S. A. U., 1903;
 Engineer, Boston-Montana Consolidated Copper and Silver Mining Co., Great Falls, Montana, 1904-1909;
 Assistant Professor, Mining, Stanford University, California, 1910-1911;
 Associate Professor, 1912—

FORBES, FRED BODIG: A. B. Geology and Mining, 1913.
 Stanford University, California.
 Engineer with F. A. Pellas & Co., Granada, Nicaragua, Central America, 1914—

*FORBES, JAMES HYDE: A. B. Geology, 1913.
 1638 Fourth Avenue, Los Angeles, California.
 Hydrographic Engineer with J. C. Branner, Niles, California, 1913—

Foster, Lora Ruth: (m) 1905-1907.
 (Mrs. Roderic Crandall.)

Fox, BYRON PARLIER: 1912—
 Seattle, Washington.
 Student, Geology, Stanford University.

*Fox, PHILIP BENTON: A. B. Geology and Mining, 1912.
 Millman, La Leonesa Mine, Matagalpa, Nicaragua, Central America, 1912—

Franklin, George Glasier: 1903-1905.

Freeman, Lewis Ransom: 1905-1909.

*FRINK, LESTER DANIEL: (m) A. B. Geology and Mining, 1904.
 419 West Galena Street, Butte, Montana.
 Mining Engineer, North Butte Mining Co.;
 Surveyor, Speculator Mine, Butte and Superior Mining Co., Butte, Montana.

*FROLLI, ALBERT WILLIAM: A. B. Geology and Mining, 1910.
 216 San Juan Street, Salinas, California.
 Deputy County Surveyor, Monterey, 1909-1910;
 Mining Engineer, Babalonia Mine, La Libertad, Chontales, Nicaragua, 1911-1913.

Fuller, Lewis Everett: 1900-1903.

*FULLER, RAYMOND AUGUST: (m) A. B. Geology and Mining, 1907.
 Assistant Manager, Penn Mining Co., Campo Seco, California.

***FYKE, ANDREW DOUGLAS**: A. B. Geology, 1913.
438 West 30th Street, Los Angeles, California.
Petroleum Geologist, Stanford University, California.

***GARFIAS, VALENTINE RICHARD**: (m) A. B., C. E. 1907; A. M. Geology, 1912.
18 Liverpool Street, Mexico City, Mexico.
Draughtsman and Transitman, Southern Pacific Railroad Co.;
Petroleum Engineer with Ralph Arnold, 1912—
Petroleum Engineer, U. S. Bureau of Mines, 1913—
917 Union Oil Building, Los Angeles, California.

*†**GARFIELD, RAYMOND SHELDON**: A. B. Geology and Mining, 1898; d. March 9, 1898.

***GARNER, AUBREY HAMILTON**: A. B. Geology and Mining, 1912.
655 Irving Avenue, Astoria, Oregon.
Geologist with Caribbean Petroleum Co., Venezuela, 1912—
Care L. J. Proctor, Box 387, Caracas, Venezuela.

***GAY, HAROLD SINCLAIR**: (m) A. B. Geology and Mining, 1904.
Superintendent, Kane Springs Mining Co., California, 1906-1907;
With American Smelters Securities Co., 1907;
Minas Tecolates, Anexas, 1907-1909;
Bonanza, Zacatecas, Mexico, via Saltillo;
Cashier, Superintendent, Minas Bonanza y Anexas, 1909—
Mining Engineer, Currier Building, Los Angeles, California.

***GAY, LESLIE ROWELL**: (m) A. B. Geology and Mining, 1909.
Assayer, Surveyor and Assistant in Mining Work;
Rancher, Redlands, California.

Geer, Fred Asahel: 1899-1901.

***GEHRMANN, WILLIAM CONRAD**: A. B. Geology, 1913.
Geologist with Caribbean Petroleum Co., Venezuela, 1913—
Care L. J. Proctor, Box 387, Caracas, Venezuela.

GILCHRIST, SAMUEL AUGUSTUS: 1895-1897.
Assayer, Tuolumne County, California.

***Gilman, Charles Edward**: (m) 1897-1901.
851 Calmar Avenue, Oakland, California.
Assistant Geologist, Branner-Agassiz Expedition to Brazil, 1899;
Consulting Engineer and Geologist with Duryea, Haehl and Gilman, 1905—
1318 Humboldt Bank Building, San Francisco, California.

Girty, George Herbert: A. B. Yale, 1892; Ph. D. 1894; Stanford, 1894-1895.
Paleontologist, U. S. Geological Survey, 1895—
U. S. Geological Survey, Washington, District of Columbia.

***GLEIM, EDGAR MILLER**: (m) A. B. Geology and Mining, 1906.
700 Waverley Street, Palo Alto, California.
President Stanford Section G. S. A. U., 1905;
Assistant Engineer, Minas Tecolates, Santa Barbara, Chihuahua, Mexico, 1906;
Superintendent, Presidio Mining Co., Shafter, Presidio County, Texas, 1907—

Goodall, Charles F.: 1903-1905.

***GOUDY, FRANKLIN BURRIS**: A. B. Geology and Mining, 1907; A. M., Columbia, 1908.
420 Symes Building, Denver, Colorado.
Cable address: "Goudell," Denver.
President Stanford Section G. S. A. U., 1906;
Mining Engineer, Congress Gold and Copper Co.;
St. Paul Mining and Reduction Co.;
Silver Ledge Mining and Milling Co.;
Esmeralda Mining Co.;
Field Engineer, Ed Millare & Co., Ely, Nevada, 1907;
Rio Grande Reservoir and Ditch Co., 1908;
Mining Engineer, Smuggler-Union Mining Co., Colorado, 1909.

Green, Waldron A.: 1912—
Pasadena, California.
Student, Geology and Mining, Stanford University.

Griffin, Allan Tristam: 1902-1905.

GRIGSBY, HARRY CLAY: (m) A. B. Geology and Mining, 1905.
Ontogata, Sonora, Mexico.
Superintendent, Wilson and Grigsby placer property, Nome, Alaska, 1905;

Engineer of Development, Alto Mining and Smelting Co., Florence, Arizona, 1905-1906; Superintendent, 1906-1907;
 Mining Engineer for Marvin, Ish & Co., Goldfield, Nevada, 1908-1909;
 Superintendent of Construction, Palmer, McBride & Quayle, on Western Pacific Railroad, 1909.

*Grimsley, George Perry: A. B. Ohio State University; A. M. 1891; Ph. D. Johns Hopkins, 1894. Graduate Geology, Stanford, 1900-1901.

Guyer, Cloyd George, 1902-1905.

*Haehl, Harry Lewis: (m) A. B. Geology and Mining, 1909; A. M. 1902.
 326 Addison Avenue, Palo Alto, California.
 Field Engineer, Bay Cities Water Co.;
 Assistant Engineer, Sierra Water Supply Co.;
 Hydraulic and Mining Engineer with firm of Duryea, Haehl & Gilman, 1318 Humboldt Bank Building, San Francisco, California.

Hale, Frederic Albert: 1905-1909.

*Hall, Elwin Bronni: 1909—
 1438 Kellam Avenue, Los Angeles, California.
 Student, Geology, Stanford University.

*Hall, Mortimer Louis: A. B. Geology and Mining, 1913.
 555 South Los Robles Avenue, Pasadena, California.
 Assayer, Surveyor and Mill Draftsman, Beaton Copper Co., La Touche Island, Alaska, 1913—

Halley, Albert Smith: (m) A. B. Geology and Mining, 1904.
 Rapid City, South Dakota.
 Metallurgist, Mogul Mining Co., 1905;
 Assistant Cashier, First National Bank, Rapid City, South Dakota.
 Banking and Quarrying.

*Halliday, Thomas Woodruff: A. B. Geology and Mining, 1911.
 Halliday Hotel, Spokane, Washington.
 Rupert, Idaho.

*Hamilton, Henry Liberty: (m) A. B. Geology, 1904.
 217 Alma Street, Palo Alto, California.
 Surveyor, Guggenheim Exploration Co.;
 Surveyor, Standard Consolidated Mining Co.;
 Mine Foreman and Assistant Manager, Aguascaliente Metal Co.;
 Field Engineer, Montebello Oil Co., Box 218, Fillmore, California, 1912—

*Hamilton, Walter Raleigh: (m) A. B. Geology and Mining, 1904.
 Belmont, California.
 Cable address: "Mahlin," San Francisco.
 Superintendent, Cyanide Plant, Standard Consolidated Mining Co., Bodie, California, 1904-1906;
 Chemist, Ymir Gold Mines, Limited, Ymir, British Columbia, 1907;
 Assistant Engineer, Southern Pacific Railroad Co., 1907-1908;
 Assistant Geologist, 1907-1908;
 Chief Geologist, Associated Oil Co., 1908-1912;
 Consulting Engineer and Oil Expert;
 Manager, Montebello Oil Co., 1912—
 Insurance Exchange Building, 433 California Street, San Francisco.

*Hammon, Wendell C.: A. B. Geology, 1913.
 3650 Washington Street, San Francisco, California.
 Graduate Student, Geology, Stanford University, 1914.

*Hannibal, Harold: A. B. Geology, 1913.
 Box 21, Stanford University, California.
 Cable Address: Hannibal, Palo Alto.
 Petroleum Geologist with Ralph Arnold, 1911—
 917 Union Oil Building, Los Angeles, California.
 General Secretary G. M. S. A. U., 1914;
 Graduate Student, Geology, Stanford University.

Hearlan, Orren Arthur: (m) A. B. Geology and Mining, 1904.
 275 South 17th Street, San Jose, California.
 Mining, Alleghany, Sierra County, California.

*Harper, Paul Coates: (m) 1901-1903.
 118 Columbia Street, Seattle, Washington.
 Banker, Vice President First Mortgage and Savings Bank, Seattle, Washington.

Harvey, Frederic Estabrook: 1893-1898.

***Havens, Harold: (m) 1897-1900.**
Real Estate, Berkeley, California.

Hawley, Henry James: 1912—
Portland, Oregon.
Student, Geology and Mining, Stanford University.

Hayes, Allan Sidney: 1912—
733 North Mentor Avenue, Pasadena, California.
Student, Geology and Mining, Stanford University.

***Hayes, Francis William: 1911—**
Cupertino, California.
Student, Geology and Mining, Stanford University.

Hellwig, Herbert Frederick: 1902-1906.

Helwig, Lester Henry: 1900-1902.

***Henderson, Charles William: A. B. Geology and Mining, 1910.**
311 Chamber of Commerce Building, Denver, Colorado.
Statistician, U. S. Geological Survey, Washington, D. C., 1910—

***Henley, Arthur Sidney: (m) 1901-1905.**
330 Park Street, Mayfield, California.
Geologist with Caribbean Petroleum Co., Venezuela, 1912-1913;
Engineer, Empire Mine, Grass Valley, California, 1913—

Henry, Lou: (m) (Mrs. Lou Henry Hoover) A. B. Geology, 1898.
The Red House, Hornton Street, London, W., England.
Cable address: "Crevooh," London.
Stanford University, California.

***Hinold, Stanley Carrollton: A. B. Geology and Mining, 1909.**
1381 South First Street, San Jose, California.
Cable address: "Scherold," Caracas, Venezuela.
Assistant Surveyor, Montana-Tonopah Mining Co., Tonopah, Nevada, 1909-1910;
Mining Engineer, Macnamara Mine, Tonopah, Nevada, 1910-1911;
Construction Engineer, Union Construction Co., Seward Peninsula, Inmachuck River, sea-
son 1912;
Geologist with Caribbean Petroleum Co., Venezuela, 1913—
Care Frank Seamans, 1900 Land Title Building, Philadelphia, Pennsylvania.

***Hess, Frank L.: (m) A. B. Geology and Mining, 1903.**
Field Assistant and Geologic Aid, U. S. Geological Survey, 1903-1906;
Assistant Geologist, 1906—
U. S. Geological Survey, Washington, D. C.

***Hilby, George Robert: 1909—**
Monterey, California.
Student, Geology and Mining, Stanford University.

***Higley, Wynter Blain: (m) A. B. Geology and Mining, 1909.**
466 Waverley Street, Palo Alto, California.
Mining Engineer, La Leonessa Mine, Matagalpa, Nicaragua, Central America, 1909-1912;
Graduate Student, Stanford University, 1914—

Hill, Harrison Wesley: 1897-1902.

Holden, Henry A.: 1911—
Ticonderoga, New York.
Student, Geology, Stanford University.

***Holley, Harry Hall: (m) A. B. Geology and Mining, 1901.**
508 Encina Avenue, Visalia, California.
Civil Engineer, Mount Whitney Power Co., Visalia, California, 1904-1908;
Civil and Hydraulic Engineer.

***Hollister, John James: (m) A. B. Geology and Mining, 1896.**
Goleta, California.
Superintendent, Providence Consolidated Gold Mining Co., California, 1905-1906;
Superintendent, Peregrina Mining and Milling Co., Guanajuato, Mexico, 1907-1908;
General Superintendent, Hines Consolidated Mining Co., Santa Barbara, Mexico, 1908-1909;
Mining Engineer, Santa Barbara, California.

***HOLWAY, RULIFF STEPHEN**: (m) A. B. Geology, 1903; M. S. University of California, 1904.
 2577 Buena Vista Way, Berkeley, California.
 Assistant Professor, Physical Geography, University of California, 1903-1912;
 Head of Department of Geography, University of California, 1912—

***HOOK, JOSEPH STANLEY**: A. B. Geology, 1910; A. M. 1913.
 Perris, Riverside County, California.
 Instructor, Economic Geology, Cornell University, Ithaca, New York.
 McGraw Hall, Ithaca, New York.

***HOOPER, HERBERT CLARK**: (m) A. B. Geology and Mining, 1895.
 The Red House, Hornton Street, London, W., England.
 Cable address: "Crevooh," London.
 Mining Engineer and Mine Owner.
 Manager, Director, and Consulting Engineer for various mining companies in the United States, Australia, China, Korea, Burma, New Zealand, and South Africa.
 1 London Wall Building, London E. C., England.

HOOVER, MRS. LOU HENRY, See Henry, Lou.

***HOOPER, THEODORE JESSE**: (m) A. B. Geology and Mining, 1901.
 65 Addison Road, London, W., England.
 Cable address: "Mildaloo," London.
 Assayer, Keystone Consolidated Mining Co., Amador City, 1902; Assistant Manager, 1903;
 Manager, 1904-1905;
 Standard Consolidated Mines, Bodie;
 Consulting Engineer, Cosmopolitan Proprietary, Limited, Mexico, 1906; General Manager, 1907-1909;
 Consulting Engineer, Minerals Separation, Limited, London, England;
 Director, Nigeria Tin Corporation, 1910;
 1 London Wall Building, London, E. C., England.

***HOPKINS, THOMAS CRAMER**: (m) B. S. De Pauw, 1887; A. M. Geology, 1892;
 Ph. D. Chicago, 1900.
 727 Comstock Avenue, Syracuse, New York.
 Assistant Geologist, Arkansas State Geological Survey, 1889-1892;
 Geologist, Indiana State Geological Survey, 1895-1896, 1901;
 Assistant Professor of Geology, Pennsylvania State College, 1896-1899;
 Professor of Geology, Syracuse University, New York, 1900—

Howard, Grenville Gates: 1911—
 Box 73, Stanford University, California.
 Student, Geology, Stanford University.

***HUGHES, ARTHUR DICKINSON**: A. B. Geology and Mining, 1908.
 Atlin, British Columbia.
 Assayer, Yukon Gold Company, Dawson, Yukon Territory, 1908-1909.

***HULSMAN, IVAN M.**: 1911—
 Susanville, California.
 Student, Geology and Mining, Stanford University.

***HUMPHREY, HARRY FRANK**: (m) A. B. Geology, 1911.
 923 Lincoln Way, San Francisco, California.

***Hunley John Burdell**: 1910—
 Newton, Washington.
 Student, Geology and Mining, Stanford University.

Huston, Harry Lee: 1895-1900.

***HYDE, JAMES MACDONALD**: (m) A. B. Geology and Mining, 1901.
 1041 Shattuck Avenue, Berkeley, California.
 Cable address: "Jamehyde."
 Assistant in Assaying, Stanford University, 1900-1901;
 Curator, California State Mining Bureau Museum, 1901-0902;
 Professor of Mineralogy and Metallurgy, University of Oregon, 1903-1906;
 Metallurgist, Guanajuato (Mexico) Consolidated Mining and Milling Co., 1906-1908;
 Superintendent, Manhattan Ore Reduction and Refining Co., Manhattan Nevada, 1908-1910;
 Consulting Metallurgist, Butte and Superior Mining Co., 1912—
 Mining and Metallurgical Engineer, Specialty, Treatment of difficult ores.
 Alaska Commercial Building, 310 Sansome Street, San Francisco, California.

— Harry McGavran: 1901-1903.

***JACKSON, BYRON NICHOLSON**: A. B. Geology and Mining, 1901.
 830 Kensington Road, Los Angeles, California.
 Millman, Inyo County;
 Assayer and Chemist, Bodie;
 Superintendent, Napoleon Mine, Calaveras County;
 Cyanide Manager, San Jose de Gradia, Sinaloa, Mexico;
 Metallurgist, Abila, Arizona;
 Geologist, Caribbean Petroleum Co., Venezuela, 1912-1913.

***JAMESON, JOY GILBERT**: A. B. Geology and Mining, 1908.
 Corona, Riverside County, California.
 Citrus Fruit Grower and Packer.

***JENKINS, OLAF PITT**: A. B. Geology, 1913.
 3 Lasuen, Stanford University, California.
 Assistant Geologist with the Branner Expedition to Brazil, 1911;
 Geologist with Tennessee State Geological Survey, 1913—
 Capitol Annex, Nashville, Tennessee.

***JOHNSON, HARRY ROLAND**: A. B. Geology, 1909.
 President Stanford Section, G. S. A. U., 1903;
 Field Geologist, U. S. Geological Survey, 1905, 1909;
 Consulting Petroleum Geologist,
 805 H. W. Hellman Building, Los Angeles, California.

Johnston, Duncan McArthur: 1912—
 874 Cedar Street, Alameda, California.
 Student, Geology, Stanford University.

Jordan, Charles William: 1912—
 Ouray, Colorado.
 Student, Geology, Stanford University.

***JORDAN, KNIGHT STARR**: (m) A. B. Geology and Mining, 1911.
 162 South Academy Avenue, Provo, Utah.
 Jordan & Winter Garage, Palo Alto, California, 1911-1913;
 General Manager, Knight-Christiansen Metallurgical Co., of Provo and Silver City, Utah,
 1913—

***Jost, FRED**: A. B., M. E. 1897; Graduate Geology and Mining, 1899-1900.
 721 Cole Street, San Francisco, California.
 Superintendent of various mines;
 Mining Engineer, 244 California Street, San Francisco, California.

KAY, DAVID NELSON: 1904-1910.

***KENNEY, CHARLES EDMOND**: A. B. Geology and Mining, 1902.
 San Pedro, California.
 Cyanide Superintendent, Standard Consolidated Mining Co., Bodie, California, 1912-1913.

***Kessler, Harry Hall**: 1899-1902.
 Superintendent of Standard Consolidated Mine, Bodie, California, 1906.

***KETELSEN, CARL CORNELIUS**: 1910-1912.
 Rhyolite, Nevada.
 West End Mining Co., Tonopah, Nevada, 1913-1914.

***KIMBALL, EDWIN BOYCE**: (m) A. B. Geology and Mining, 1895.
 284 Mountain Avenue, Piedmont Station, Oakland, California.
 Cable address: "Ebkim," San Francisco.
 Consulting Mining Engineer.
 1205 Alaska Commercial Building, San Francisco, California.

King, Preston, Wallace, 1903-1907.

King, Vernon Leslie: 1912—
 Petaluma, California.
 Student, Geology and Mining, Stanford University.

Klamt, Augustus Joseph: 1900-1903.

***KNECHT, CARL EMIL**: (m) A. B. Geology and Mining, 1899; A. M., 1900.
 Box 1081, Johannesburg, Transvaal, South Africa.
 Geologist and Chemist, American Oil and Asphalt Co., Los Angeles, 1900;
 Assayer, Free Gold Mining Co., Hedges, 1901;
 Chief Sampler, 1902;
 Chief Surveyor, 1903;
 Crown Reef Gold Mining Co., Johannesburg, South Africa, 1904;
 Assistant Engineer, Consolidated Mines Selection Co., Limited, Johannesburg, South Africa.

KNIPPER, EARL H.: (m) A. B. Geology and Mining, 1903.
 1009 Manhattan Place, Los Angeles, California.
 Mining Engineer, Allis-Chalmers Company.

*KNOX, NEWTON BOOTH: (m) A. B. Geology and Mining, 1895; E. M. Columbia, 1897.
 2 Devonshire Street, Portland Place, London, W., England.
 Mining Engineer.

*KOEGERNER, WILLIAM: A. B. Geology and Mining, 1909.
 131 East 24th Street, North, Portland, Oregon.
 Assistant Engineer, Inspiration Copper Co., Globe, Arizona, 1909-1912;
 Superintendent, Barker Mines Co., Hughesville, Montana, 1913.

*KRAMM, HUGO EDMUND: A. B. Geology and Mining, 1909; A. M. 1910; d. January 11, 1913.
 Assistant in Mineralogy, Stanford University, 1908-1910;
 Instructor in Mineralogy, Cornell, 1910-1912.

Kuder, Clyde S.: 1911-1913.

*LACEY, WILLIAM NOBLE: A. B. Chemistry, 1912.
 Assistant in Assaying, Stanford University, 1911.

Lamb, Porter Emerson: 1899-1901.

*LANAGAN, WILLIAM HENRY: A. B. Geology and Mining, 1905.
 406 Cherry Street (office, Monadnock Building), San Francisco, California.
 Assistant Manager, Wild Goose Mining and Trading Co., Nome, Alaska, 1906-1910;
 Manager, Orak Dredging Co., Nikolaiersk-on-Amur, East Siberia, 1910—

*LANE, FULTON: A. B. Geology and Mining, 1906.
 848 Irole Street, Los Angeles, California.
 Field Engineer, U. S. Field Corps, Sacramento, California;
 Mining and Civil Engineer with A. M. Strong, Bishop, California;
 Deputy County Surveyor, Inyo County, 1907-1909;
 Assistant Engineer, Yawhine Division, Los Angeles Aqueduct, 1909—
 Consulting Mining and Civil Engineer,
 90 Union Oil Building, Los Angeles, California.

Langstroth, Francis Blackburn: 1904-1907.

*LANTZ, GROVER BERNER: A. B. Metallurgy, 1913.
 Assayer, Eagle-Shawmut Mine, California, 1913;
 Assayer, Colorado Mining Co., Manila, Philippine Islands, 1914—
 Care Colorado Mining Co., Kneedler Building, 218 Carriedo, Manila, Philippine Islands.

*La Peire, George Wallen: 1912—
 436 Hamilton Avenue, Palo Alto California, P. O. Box 31.
 Student, Geology and Mining, Stanford University.

*LASKY, BERNARD HAROLD: A. B. Geology and Mining, 1913.
 584 Hill Street, San Francisco, California.
 Engineer with Eagle-Shawmut Mining Co., California, 1913;
 Engineer with Presidio Mining Co., Shafter, Texas, 1913—

Laughlin, Charles Eugene: 1905-1907.

Lawrence, George Richardson: 1897-1901.

Lee, Naylor C.: 1912—
 Denver, Colorado.
 Student, Geology, Stanford University.

*Lee, Wah Seyle: 1910—
 968 Washington Street, San Francisco, California.
 Student, Geology and Mining, Stanford University.

*LEIB, EARL RUSSELL: (m) A. B. Geology and Mining, 1912.
 505 Andrews Boulevard, Los Angeles, California.
 Coast Manager, Sharp-Hughes Tool Co.,
 924 Higgins Building, Los Angeles, California.

Leib, Roy Chilton: A. B. (Pre-Legal), 1904; Geology, 1906-1908.

Leland, Harry Russell: 1897-1899.

*LEMMON, ALLEN BOSLEY, JR.: (m) A. B. Geology and Mining, 1901.
 Fair Oaks, California.
 Warrant Registrar to State Controller, Box 603, Sacramento, California.

LETT, ANDREW HILLIARD: A. B. Geology and Mining, 1905.
Magnolia Avenue, Riverside, California.

Levy, Edmond L.: 1902-1906.

***Lewis, James Ogier:** Geology, 1905-1909.
414 Forest Avenue, Pacific Grove, California.
Geologist, Associated Oil Co., 1909-1912;
Geologist with R. B. Moran in Texas, 1912-1913, California, 1914—
311 California Street, San Francisco, California.

***LEWIS, ROBERT STRONG:** A. B. Geology and Mining, 1905; E. M. 1912.
270 South 13th East Street, Salt Lake City, Utah.
Superintendent Kuykendall Mining and Milling Co., Carlsbad, New York, 1906;
Engineer in charge of Warrior Copper Company, Globe, Arizona, 1906-1907;
Engineer with Steptoe Valley Mining and Smelting Co., McGill, Nevada, 1908-1911;
Associate Professor, Mining, Utah University, Salt Lake City, Utah, 1912—

Little, John Elwin: 1907-1909.

Little, Robbins: 1906-1908.

***Longmire, William Richard:** 1910—
Highland, California.
Student, Geology and Mining, Box 53, Stanford University, California.

***Louis, Gilbert Ernest:** 1906-1910.
Riverside, California.
Engineer, Caledonian Construction Co.
Suite 538, Bradbury Building, Los Angeles, California, 1913—

***LUHRS, ARTHUR CLEVELAND:** A. B. Geology and Mining, 1909.
Phoenix, Arizona.
Ray Consolidated Mining Co., Ray, Arizona, 1909—

Luis, Franklin Alfred: 1909-1912.

***LYMAN, GEORGE BYRON:** 1912—
Yuba City, California.
Student, Geology and Mining, Stanford University.

***LYNE, HENRY STEPHENS:** A. B. Geology and Mining, 1913.
Care F. J. T. Lyne, Tallangatta, Victoria, Australia.
Irrigation Engineer for Brazilian Government, 1912;
Engineer with Mount Bischoff Tin Mining Co., Waratah, Tasmania, 1913—

***LYON, DORSEY ALFRED:** A. B. Chemistry, 1898; A. M. Harvard, 1902.
Las Vegas, New Mexico.
Assistant, Chemistry Department, Stanford University, 1897-1898;
Professor, Mineralogy and Metallurgy, University of Washington, 1898-1901;
Assistant State Geologist, Washington, 1900-1901;
Engineer, United States Smelting Co., Utah, 1902-1903;
Instructor and Assistant Professor, Metallurgy, Stanford University, 1903-1908;
Manager Noble Electric Steel Co., Heroult, California, 1908-1911;
Expert, U. S. Bureau of Mines, University of Utah, Salt Lake City, Utah, 1912—

Lyons, Raymond Houston: 1905-1907.

McCabe, Harry Manning: 1900-1902.

***McCANN, ROBERT JAMES:** (m) A. B. Geology and Mining, 1912.
728 Ocean Avenue, Monterey, California.
General Manager, Longfellow Mining Co., Oak Flat, California, 1912-1913;
Engineer with Eagle-Shawmut Mining Co., Chinese Camp, California, 1913-1914;
Mining Engineer, Specialty, Placer.

***McDANIEL, GEORGE WILLIAM:** A. B. Geology and Mining, 1908.
Osceola, Nevada.
Engineer, Camp Bird Mine, Colorado, 1908;
Engineer for Spurr & Cox, Incorporated, Mining Engineers, New York, 1909-1912;
Geologist, Tonopah Mining Co., Tonopah, 1912;
Superintendent, United States Tungsten Mine, Osceola, Nevada, 1913—

McDonald, Augustus: 1905-1907.

***McFADDEN, RALPH JOHN:** (m) A. B. Geology and Mining, 1908.
Fullerton, California.
Fruit Grower, Fullerton, California.

McGilvray, Malcolm C.: 1913—
 Escondito Cottage, Stanford University, California.
 Student, Geology and Mining, Stanford University.

MacIntyre, John Malcolm: 1904-1907.

McKenna, John Shore: 1912—
 Lemoore, California.
 Student, Geology and Mining, Stanford University.

Mackenzie, Andrew Nichols: 1912—
 1517 Harvard Boulevard, Los Angeles, California.
 Student, Geology and Mining, Stanford University.

***McLain, George Brundage:** 1903-1908.

***McLAUGHLIN, Roy Parmelee:** (m) A. B. Geology and Mining, 1902.
 Redwood City, California.
 Cable address: "Roylaugh," San Francisco.
 Assistant Engineer, North Star Mines Co., Grass Valley, 1904;
 Engineer, Standard Consolidated Mining Co., Bodie, 1905-1906;
 Engineer, Mono Lake Railway and Lumber Co., Bodie, 1907;
 Geologist, Associated Oil Co., San Francisco, 1908-1913;
 Assistant Geologist, State Mining Bureau, San Francisco, 1913—
 818 Mills Building, San Francisco, California.

McLellen, Frank Lloyd: 1893-1895.

***McNAIR, STUART STRATHY:** (m) A. B. Geology and Mining, 1912.
 Empire Zinc Co., Canyon City, Colorado, 1913—

McNaught, Carl Shelby: 1900-1904.

McNAUGHT, HECTOR COWAN: A. B. Geology and Mining, 1905.
 1640 Lincoln Street, Denver, Colorado.
 Cable address: "Denver."
 Mining Engineer, La Grange Ditch and Hydraulic Mining Co.;
 Mining Engineer, Yukon Gold Mining Co., 1911;
 Engineer, Hendryx Cyanide Machinery Co., Denver, Colorado, 1911-1912;
 Consulting Engineer, 1057 Monadnock Building, San Francisco, California.

McNulty, Hugh William: 1913—
 1115 T Street, Fresno, California.
 Student, Geology and Mining, Stanford University.

MacPherson, Frederic Roger: 1905-1907.

***MACREADY, GEORGE ALEXANDER:** A. B. Geology and Mining, 1910.
 6023 Woodlawn Avenue, Chicago, Illinois.
 Instructor, Geology, Stanford, 1910-1911;
 Geologist with Caribbean Petroleum Co., Venezuela, 1912—
 Graduate Student, Geology, Walker Museum, University of Chicago, Chicago, Illinois, 1914—
 Care L. J. Proctor, Box 387, Caracas, Venezuela.

Macy, Lloyd Richardson: 1906-1908.

***MANN, HORACE:** (m) A. B. Geology and Mining, 1910.
 San Carlos, California.
 Civil Engineer, U. S. Engineer's office, 401 Custom House Building, San Francisco.

***MATTHEWSON, ARTHUR ADELBERT:** A. B. Geology and Mining, 1908.
 Coronado, California.
 Manager, J. A. Mathewson Grocery Co., Coronado, California, 1908—

Mattei, Bert Chester: 1913—
 Los Olivos, California.
 Student, Geology and Mining, Stanford University.

***MAYRKIS, LOUIS JOHN:** A. B. Geology and Mining, 1907.
 Beardstown, Illinois.
 Podeross Mining Co., Callahuasi, Chile;
 Tanalyk Mine, Southern Urals, Russia, 1912—
 Care H. C. Hoover, 1 London Wall Buildings, London, England.

***MEANS, JOHN HARRISON:** A. M., Geology and Mining, 1892.
 62 London Wall Building, London, E. C., England.
 Naraguta, Bautchi Province, Northern Nigeria, Africa, 1910-1911;
 Mawchi via Toungoo, Burma, 1913—
 Specialty, Early Investigation of Properties.

*Meiklejohn, David: Chemistry, 1900.

Melcon, Zenas: 1913—
Kingsburg, California.
Student, Geology and Mining, Stanford University.

*MELCZER, EDWARD A.: A. B. Geology and Mining, 1910.
317 West Jackson Boulevard, Chicago, Illinois.
President Stanford Section G. M. S. A. U., 1910;
Clothier, 324 Occidental Building, Chicago, Illinois.

*MENKE, JOHN HENRY, JR.: A. B. Geology and Mining, 1910.
Salinas, California.

*MERRITT, FLOYD CALHOUN: A. B. Geology and Mining, 1910.
1202 Garden Street, San Luis Obispo, California.
Geologist with Caribbean Petroleum Co., Venezuela, 1913-1918;
Draftsman, California State Highway Commission, 1913-1914;
Consulting Geologist, 1914—

*Miller, James Irvin: 1906-1910.
In Argentine Republic, South America.

*Miller, William John: B. S. Pacific, 1900; Graduate Geology, Stanford, 1900-1902;
M. S. Pacific, 1902; Ph. D. Johns Hopkins, 1905.
Instructor, Geology and Chemistry, College of the Pacific, 1900-1902;
Field Assistant, Maryland Geological Survey, 1904;
Field Assistant, U. S. Geological Survey, 1905-1906;
Professor, Geology and Mineralogy, Hamilton College, Clinton, New York, 1905—
Geologist, New York Geological Survey, 1907—

Millis, William Lee: 1903-1909.

*MILLS, LOUIS DAVID: A. B. Geology and Mining, 1901.
103 Second Street, San Francisco, California.
Construction and Consulting Metallurgical Engineer, 1901—

*MITCHELL, DEANE PRESCOTT: (m) A. B. Geology and Mining, 1896.
7 York House, Kensington, London, W., England.
Manager, East Murchison United, Limited, 1897-1899;
General Manager, Bewick, Moreing & Co., New Zealand, 1899-1903;
General Manager, Bewick, Moreing & Co., Melbourne, Australia, 1903-1910;
Consulting Mining Engineer, 1910—
1 London Wall Building, London, E. C., England.

Moore, Roy: 1894-1896.

*MORAN, ROBERT BRECK: (m) A. B. Geology, 1907.
Berkeley, California.
Cable address: "Morpet," San Francisco.
President Stanford Section G. M. S. A. U., 1906;
Superintendent, Pennmont Gold Mining Co., Martin, Montana, 1906;
Assistant Geologist, Southern Pacific Railroad Co., 1907;
Geologist, Associated Oil Co., 1908-1910;
Geologist, Standard Oil Co. of California, 1910-1911;
Consulting Geologist and Engineer, 1911—
311 California Street, San Francisco, California.

*Morgan, Harry Joseph: 1908—
527 West 30th Street, Los Angeles, California.
Student, Metallurgy, Stanford University.

Morgan, Maurice Edward: 1913—
Bridgeport, Connecticut.
Student, Geology and Mining, Stanford University.

Morrison, Harry Lee: 1899-1904.

Motz, Ralph Leslie: 1902-1907.

*NARAMORE, CHESTER: (m) A. B. Geology and Mining, 1903.
President Stanford Section G. S. A. U., 1902-1903;
Field Assistant, State Mining Bureau, San Francisco, California, 1903-1906;
Statistician, U. S. Geological Survey, Denver office, 1906-1908;
Statistician, U. S. Geological Survey, San Francisco office, 1908—
Field Geologist and Oil-lease Superintendent, Consolidated Oil Lands Co., 1909-1914;
Superintendent Montebelo Oil Co., Fillmore, California, 1914—

***NASH, HOWARD FRANK**: (m) A. B. Geology and Mining, 1910.
 443 Cowper Street, Palo Alto, California.
 Cable address: "Nash," Maracaibo.
 Geologist with Caribbean Petroleum Co., Venezuela, 1912—
 Maracaibo, Venezuela.

Neal, Malcolm Allan: 1906-1908.

Neff, Clarence William: 1904-1907.

***Nelson, Wilbur A.**: B. S. Vanderbilt, 1910; Graduate Student, Geology, Stanford, 1913—
 Richland and Christopher Streets, Nashville, Tennessee.
 Assistant Geologist, Tennessee Geological Survey, 1910—
 Capitol Annex, Nashville, Tennessee.

***Newsom, John Flesher**: (m) A. B. Indiana University, 1891; A. M. Geology and Mining, 1892; Ph. D. 1901.
 1129 Cowper Street, Palo Alto, California.
 Assistant Geologist, Arkansas Geological Survey, 1891-1893;
 Instructor and Assistant Professor of Geology, Indiana University, 1895-1898;
 Assistant Professor of Mining, Stanford, 1899-1901;
 Associate Professor, Stanford University, 1901-1909;
 Professor of Mining, Stanford University, 1909-1910;
 Consulting Geologist and Mining Engineer, 1910—

Nichols, Percy E.: 1900-1902.

Nickel, Louis: 1898-1901.

***Nims, Charles Brewster**: (m) A. B. Geology and Mining, 1907.
 Raymond, Washington.
 Assistant Engineer, Yukon Gold Co.;
 Civil and Mining Engineer.

Nisbet, John McHenry: 1912—
 Upland, California.
 Student, Geology and Mining, Stanford University.

Nissen, Roger Christian: 1901-1905.

***Nixon, Carey H.**: 1911—
 Onawa, Iowa.
 Student, Geology and Mining, Stanford University.

***Nobs, Frederick William**: (m) A. B. Geology and Mining, 1905.
 Redwood City, California.
 President Stanford Section G. S. A. U., 1905;
 Engineer, Standard Consolidated Mining Co., Bodie, California, 1905-1906;
 With Anglo-Continental Gold Syndicate, 1906;
 Manager of Santa Maria Mines, Ltd., Zacatecas, Mexico;
 Manager, La Leonessa Mine, Matagalpa, Nicaragua, Central America, 1911-1913;
 Consulting Geologist and Engineer, 1914—

***Nobs, Walter Rudolf**: 1909-1911. d. August, 1913.
 With Kern Trading and Oil Co., Coalinga, 1911-1912;
 Geologist with Caribbean Petroleum Co., Venezuela, 1912-1913.

***Nolan, Edward Dana**: 1907-1911.
 Geologist, New York and Bermudas Co., Brighton, British West Indies, 1911.

†**North, Edmund David**: (m) A. B. Geology, 1902. d. June 22, 1910.
 Geologist, Montana-Tonopah Mine, Tonopah, Nevada;
 Mining Engineer and Mine Superintendent, Mexico.

***North, Wheeler Orrin**: (m) A. B. Geology and Mining, 1904.
 Assayer, Cyanide Foreman, Mill Superintendent, Engineer in Construction and Underground Work, Examining Engineer and Mine Geologist, Goldfield Consolidated Mines Co., 1906-1909;
 Superintendent of Rubber Plantation, Borneo, 1909-1913.

Noteware, Philip Joseph: 1898-1900.

***Nutter, Edward Horr**: (m) A. B. Geology and Mining, 1902.
 2008 Cedar Street, Berkeley, California.
 President Stanford Section G. S. A. U., 1901-1902;
 Assistant Superintendent, Standard Consolidated Mining Co., Bodie, California;

Assistant General Superintendent, Liberty Bell Gold Mining Co., Telluride, Colorado; General Superintendent, 1907-1909; Mining Engineer, Alaska; Merchants' Exchange Building, San Francisco, California.

***OCHSNER, WASHINGTON HENRY**: (m) A. B. Geology, 1909. 923 First National Bank Building, San Francisco, California. Geologist, California Academy of Science, Galapagos Expedition, 1905-1907; Geologist, Southern Pacific Railroad Co., 1907-1908; Associated Oil Co., 1909-1910; Consulting Geologist, 1910—First National Bank Building, San Francisco, California.

Olmsted, Clarence Edward: 1910-1913.

***OSBORNE, CLARENCE BRISTOL**: A. B. Geology and Mining, 1909. 401 West 23d Street, Los Angeles, California. President Stanford Section G. M. S. A. U., 1907-1908; Assayer, Union Consolidated Gold Mines, 1902-1904; Field Surveyor, City of Los Angeles, 1904-1906; Cement Expert and Field Geologist, Comptroller State Highway Commission, 1911—Forum Building, Sacramento, California.

Osborne, Raymond Gaylord: 1903-1906.

***PACKARD, HENRY JESSUP**: A. B. Geology and Mining, 1911. Millman, La Leonesa Mine, Nicaragua, 1911-1912; Geologist with Caribbean Petroleum Co., Venezuela, 1912—Care L. J. Proctor, Box 387, Caracas, Venezuela.

***PARK, ROBERT NYM**: A. B. Geology and Mining, 1904. 1319 Lincoln Avenue, Alameda, California. Peregrina Mina y Anexos, Guanajuato, Mexico, 1904; Shift Foreman, San Francisco Mill, Pachuca, Mexico, 1904; Field Assistant to Professor J. C. Branner, Indian Territory, U. S. A., 1905; General Examiner of Mining Properties, Chile and Bolivia, 1907; Operator, Chuguiaguila Gold Placer Mine, 1910-1913.

***PARKIN, WILLIAM METCALF**: (m) A. B. Geology and Mining, 1901; A. M. Columbia University, School of Mines, 1902. 248 Fourth Avenue, Pittsburg, Pennsylvania. Cable address: "Park Inn," Pittsburg. President Stanford Section G. S. A. U., 1900-1901; Engineer Power Plants and Street Railways; Director, Diamond National Bank, Logan Trust Company; Treasurer, H. P. Taylor & Co. Banking House; Engineer, Four States Coal and Coke Co., West Virginia Properties; Consulting Engineer for Jones interests; Engineer and Geologist of Coal, etc. 5577 Hampton Street, Pittsburg, Pennsylvania.

***PARMILK, HARVY WRIGHT**: A. B. Geology and Mining, 1913. Santa Barbara. Engineer, Yukon Gold Company, Dawson, Yukon Territory, Canada, 1913—

***PARSONS, BENJAMIN EVERETT**: (m) A. B. Geology, 1911. 647 Lytton Avenue, Palo Alto, California. President Stanford Section G. M. S. A. U., 1910-1911; Petroleum Geologist; Assistant Geologist Southern Pacific Railroad Co., 1911—712 Flood Building, San Francisco, California.

***Patterson, I. Lee**: 1909-1913. 206 Lumber Exchange Building, Portland, Oregon. Millman, Midas Mine, Knob, California.

Patterson, William John: 1898-1903.

Paulsen, Jasper William: 1912—602 Waverley Street, Palo Alto, California. Student, Geology and Mining, Stanford University.

***PEAKE, ALONZO WILLIAM**: A. B. Geology and Mining, 1912. With Montebello Oil Co., Fillmore, California, 1912—

***PECKHAM, ARTHUR BIXIO**: A. B. Geology and Mining, 1912. 74 North 13th Street, San Jose, California. Assayer and Chemist, 1912-1913; Cyanide Foreman, 1913—Minas del Tajo, Rosario Mining Co., Rosario, Estado de Sinaloa, Mexico.

Pellas, Silvius Frederick: 1910—
Care Pellas & Co., Granada, Nicaragua, Central America.
Student, Metallurgy, Stanford University.

***Pemberton, John Rothwell:** A. B. Geology, 1909.
71 Clarendon Street, San Francisco, California.
Field Assistant, Geology, Stanford University, 1908-1909;
Geologist, U. S. Geological Survey, 1908;
Ministerio de Obras Publicas, Argentine Republic, 1909—

***Peterson, Clarence Jennings:** A. B. Geology and Mining, 1910.
Assistant Surveyor, Tonopah Mining Co., Tonopah, Nevada, 1910-1912;
Geologist with Caribbean Petroleum Co.,
Port of Spain, Trinidad, British West Indies, 1912-1913.

PoINDEXTER, Henry Thyrle: (m) A. B. Geology and Mining, 1897.
Dillon, Montana.
Mining Engineer, Boston and Montana Copper Mining Co., Butte, Montana, 1908-1909;
Mining Engineer, Excelsior Mining and Smelting Company, Nevada, 1908-1909;
Manager, Copper Queen Mining Co., Idaho, 1903-1905;
President, PoinDEXTER & Orr Live Stock Co., Dillon, Montana, 1905—

*†**Pomeroy, Ernest Younger:** A. B. Geology and Mining, 1905. d. August, 1909.

***Pratt, Francis Sitwell:** A. B. Chemistry, 1913.
Ontario, California.
Assistant in Assaying, Stanford, 1913-1914;
Graduate Student, Chemistry, Stanford University, 1914—

***Prescott, Basil:** (m) A. B. Geology and Mining, 1908.
Superintendent, Butters Potosi Mines, Consolidated, 1909;
Mining Geologist to Butters Mines in Salvador and Mexico, 1909-1910;
Matchuala United Securities Co., Matchuala, San Luis Potosi, Mexico.

***Preston, Archibald Edward:** (m) A. B. Geology and Mining, 1905.
715 South Hope Street, Los Angeles, California.
Assistant Geologist, Union Oil Co., of California;
Geologist, General Petroleum Co., Taft, California, 1913.

***Prichard, William Anthony:** (m) A. B. Geology and Mining, 1898.
Care Bank of Palo Alto, Palo Alto, California.
Superintendent, Keystone Consolidated Mining Co., California, 1898-1901;
Manager, Lake View Consolidated, Ltd., Australia, 1901-1902;
Representative, Bewick, Moreing & Co., West Australia, 1902-1904;
Consulting Engineer, London, 1904-1905;
Representative, Anglo-Continental Gold Syndicate in Mexico, 1906-1909;
Consulting Engineer and Mine Owner, Apartado 1060, Mexico City, Mexico.

Priva, Frank Reeves: 1907-1909.

***Prout, Franklin Stanton:** A. B. Geology and Mining, 1912.
Geologist with Caribbean Petroleum Co., Venezuela, 1912—
Care L. J. Proctor, Box 387, Caracas, Venezuela.

***Purdue, Albert Homer:** (m) A. B. Geology, 1893.
Capitol Annex, Nashville, Tennessee.
Assistant, Arkansas Geological Survey, 1893;
Principal of Rensselaer, Indiana, High School, 1894-1895;
Professor of Geology, University of Arkansas, 1896-1906;
Assistant, U. S. Geological Survey, 1901-1907;
State Geologist of Arkansas, 1907-1911;
State Geologist of Tennessee, 1911—
Capitol Annex, Nashville, Tennessee.

***Pyle, Kenneth Daingerfield:** (m) 1909—
Care W. R. Pyle, Gilroy, California.
Student, Metallurgy, Stanford University;
Assistant, Metallurgy, Stanford University, 1913—
1212 Byron Street, Palo Alto, California.

Ramsay, Reginald Crawford: 1904-06.

***Randall, Charles Alfred:** A. B. Geology and Mining, 1910; E. M. 1911.
Engineer, Nipissing Mining Co., Ontario, Canada, 1910-1913;
Engineer, Tough-Oakes Gold Mines Co., Ltd., 1913—
Swastika, Ontario, Canada.

Rawles, Wesley Mock: 1905-1910.

RAY, BHUPENDRA NATH: B. S. Calcutta, 1908; A. M. Stanford, 1913.
 18-1 Beadon Street, Calcutta, India.
 Metallurgist, 2963 Webster Street, San Francisco, California.

***RAY, JAMES CHANDLER**: (m) A. B. Geology and Mining, 1913.
 1235 Webster Street, Palo Alto, California.
 Graduate Student, Geology and Mining, Stanford University.

Reed, John Defrees: 1898-1900.

Reeves, William Clyde: 1898-1905.

***Reeves, Frank Wixon**: 1911—
 San Bernardino, California.
 Student, Geology and Mining, Stanford University.

Rehm, Francis Edward: 1911—
 Sonora, California.
 Student, Geology and Mining, Stanford University.

***REMINGTON, ARTHUR E.**, A. B. Geology and Mining, 1913.
 Ilion, New York.
 Assayer and Sampler, Babalonia Mine, Chontales, Nicaragua, Central America, 1913-1914;
 Assayer and Sampler, La Leonessa, Matagalpa, Nicaragua, Central America, 1914—

Reynolds, Fred Emory: 1894-1896.

***Rhyne, Homer**: 1903-1908.
 Geologist, American Petroleum Co., Coalinga, California.

***RICE, EDWARD WALDO**: A. B. Chemistry, 1909.
 465 Pacific Avenue, Santa Cruz, California.
 Assistant in Assaying, Stanford University, 1908-1909;
 Chemist, Santa Cruz Portland Cement Co., 1909—
 Santa Cruz, California.

***RICE, JOHN BIRMINGHAM**: A. B. Geology and Mining, 1897.
 With Dupont Powder Works, care Dupont Powder Co., Chronicle Building, San Francisco, California.

***RICE, WARREN SUMNER**: A. B. Geology and Mining, 1910.
 1014 Bird Avenue, San Jose, California.
 Mining Engineer, Columbia, Esmeralda County, Nevada.

Riesner, Roy Milton: 1906-1908.

***RITTER, GEORGE WASHINGTON**: A. B. Geology and Mining, 1896.
 Care University Club, Salt Lake City, Utah.
 City Engineer, Salt Lake City, 1905;
 Managing Engineer, Eureka Hill Mining Co., 1901—
 Desert National Bank Building, Salt Lake City, Utah.

Ritter, Rollin von: 1898-1900.

***Robbins, James Clayton**: 1906-1909.
 Millman, San Poil Mine, Republic, Washington.

***ROBERTS, MILNOR**: A. B. Geology and Mining, 1899.
 4505 15th Avenue, N. E., Seattle, Washington.
 Instructor in Metallurgy, Stanford University, 1900-1901;
 Washington State Geological Survey, 1901-1902;
 Dean of School of Mines and Professor of Metallurgy and Mining, University of Washington, 1901—
 Consulting Engineer for various companies.

***Rogers, Austin Flint**: (m) A. B. Kansas, 1899; A. M. 1900; Ph. D. Columbia, 1902.
 1047 Ramona Street, Palo Alto, California.
 Assistant Geologist, University Geological Survey of Kansas, 1898-1900, 1903, 1908;
 Assistant Mineralogist, Kansas University, 1898-1900;
 Tutor in Mineralogy, Columbia University, 1902-1905;
 Assistant Professor of Mineralogy and Petrography, Stanford University, 1905-1911;
 Associate Professor, 1911—

ROLFE, FRANKLIN: (m) A. B. Geology and Mining, 1898.
 1631 Council Street, Los Angeles, California.
 Construction Superintendent, Los Angeles Aqueduct, Mojave;
 Contractor.
 418 Merchants Trust Building, Los Angeles, California.

Rook, Ross Henty: 1904-1906.

Roosevelt, Will Kelley: 1901-1905.

***Rose, Hugh: (m) A. B. Geology and Mining, 1900.**
71 Broadway, New York.

Manager Tecolote Mines, Santa Barbara, Chihuahua, Mexico, 1905-1906;
Assistant General Superintendent, American Smelters Securities Co., United States and
Mexico, 1906-1908;
General Superintendent, Guanajuato Development Co., Mexico, 1908-1909;
Representative in Mexico, Camp Bird, Ltd., of London, 1909-1910;
Care Santa Gertrudis Co., Pachuca, Hidalgo, Mexico, 1910—

Roseberry, Fred Thomas: (m) 1898-1903.

***Rosenberg, Leo M.: A. B. Geology and Mining, 1907.**
Los Angeles, California.

Sampler, Roy, Arizona;
Milling, Goldfield, Nevada;
Superintendent, Inyo County;
Mine Examiner, Eldorado County;
Mining Engineer, Ajo Copper Co., Gila Bend, Arizona;
Engineer, Brighton, Trinidad, British West Indies.

***Ross, Harry Scott: A. B. Chemistry, 1909.**
Pasadena, California.

Assistant in Assaying, Stanford University, 1908-1909;
Superintendent, Buclineo Mine, Jolon, California, 1909-1910.

Ross, Stanley: 1912—
561 Middlefield Road, Palo Alto, California.
Student, Geology and Mining, Stanford University.

†Runyon, John Howard: 1906-1909. d. 1910.

Rush, Frederick Winn: (m) A. B. Geology and Mining, 1901.
Bakersfield, California.

Superintendent, San Emigdio Ranch, Bakersfield, California.

Sampson, George Henry: 1906-1908.

Sanderson, Jerry Blaine: 1902-1904.

***Saunders, Benjamin Rankin: (m) A. B. Geology and Mining, 1907.**
1976 42nd Avenue, Oakland, California.

Engineer, Black Mountain Mine, Magdalena, Sonora, Mexico, 1910-1912.

Sawyer, Dwight Lewis: 1913—
Gardena, California.

Student, Geology and Mining, Stanford University.

***Schellinger, Alfred Cook: A. B. Geology and Mining, 1910.**

Chemist with Selby Smelting and Lead Company, California (in winter);
Assayer, Yukon Gold Co., Dawson City, Yukon Territory, Canada (in summer).

***Schrader, Gustave: 1903-1905.**

Mining Engineer, Sutter Creek, California.

***Schwennesen, Alvin Theodore: A. B. Geology and Mining, 1910; E. M. 1911.**

Instructor, Mining Department, Stanford University, 1910-1911;
Hydrographer with U. S. Geological Survey, 1911;
Spring Valley Water Co., 1912-1913;
Geologist and Mining Engineer.

Scott, Walter Winthrop, 1912—
Willits, California.

Student, Geology and Mining, Stanford University.

***Severy, Clarence Luther: (m) A. B. Geology and Mining, 1908.**

1269 North Mentor Avenue, Pasadena, California.

Cable address: "Severy," Pasadena.

Engineer for Exchequer Mining and Power Co., Merced, California, 1908;

With Noble Electric Steel Co., Heronlt, California, 1909;

Assayer and Engineer, Argonaut Mining Co., Jackson, 1909;

Engineer, Poderosa Mining Co., Ltd., Callahuasi, Chile, 1909;

Consulting Mining and Petroleum Geologist and Engineer.

311 California Street, San Francisco, and 805 H. W. Hellman Building, Los Angeles, California.

†Sevier, Irving Henry: 1901-1904. d. September, 1904.

***Sevier, Milton William (m)** 1910-1912.
Rancher, Eureka, California.

Sharpe, Howard Brookes: 1900-1903.

***Shedd, Solon:** (m) B. S. Monmouth, Oregon, 1889; A. B. Geology, 1896; A. M. 1907; Ph. D. 1910.
300 Montgomery Street, Pullman, Washington.
Instructor, Natural Science, Oregon Normal, 1890-1894;
Assistant Professor, Geology, Washington Agricultural College, 1896-1901; Professor, 1901—
Geologist, Washington School of Mines Survey, 1901-1902;
Assistant State Geologist, Washington Geological Survey, 1909—

Shores, Ethelbert: 1907-1910.

Short, Frank Rice: A. B. Geology and Mining, 1898.
1043 Monadnock Building, San Francisco, California.
Mining Engineer with Guggenheim Exploration Co. in Alaska.

***Shutts, Arthur Burton:** (m) A. B. Geology and Mining, 1909.
Poultney, Vermont.
Minillas, Estado de Zacatecas, Mexico.

Sickler, Jack Miller: 1911-1913.
Pasadena, California.

Siebenthal, Claude Ellsworth: (m) A. B. Geology, 1892; A. M. 1893.
Assistant Geologist, Geological Survey of Arkansas, 1889-1893;
Instructor, Geology, Indiana University, 1891;
Assistant Geologist, Indiana Geological Survey, 1896-1899;
Assistant Geologist, U. S. Geological Survey, 1907—
U. S. Geological Survey, Washington, D. C.

Siemon, Fred: 1912—
Ontario, California.
Student, Geology and Mining, Stanford University.

Simpson, Ralph Townsend: 1913—
Pasadena, California.
Student, Geology and Mining, Stanford University.

***Sinclair, Ewart Gladstone:** (m) A. B. Geology and Mining, 1912.
Kalispell, Montana.
Geologist with Caribbean Petroleum Co., Venezuela, 1912-1913;
Engineer in Montana, 1913—

***Sirdevan, William Henry:** A. B. Geology and Mining, 1909.
Olean, New York.
With Wild Goose Mining and Trading Co., Nome, Alaska, 1909-1911;
Geologist with J. E. Spurr, 1911—
Care Tonopah Mining Co., Tonopah, Nevada.

Skinner, John Kenneth: 1909-1913.

Slaker, Frank Louis: 1900-1902.

Slemons, Hal Maxwell: (m) 1899-1901.
Monrovia, California.
City Water Superintendent, Monrovia, California, 1907-1912;
Irrigation Engineer, Monrovia, California.

***Slusher, Dale:** A. B. Geology and Mining, 1907.
Pendleton, Oregon.
Assistant Geologist, Associated Oil Co., 1908;
Southern Pacific Railroad Company, 1907-1908;
Section 25, Coalinga Oil District, Coalinga;
Mining Engineer, Tampico, Tamaulipas, Mexico;
Mining Engineer, Furbers, Papantala, Vera Cruz, Mexico.

***Small, Horatio L.:** A. B. Geology and Mining, 1911.
334 Cowper Street, Palo Alto, California.
Irrigation Engineer and Geologist for Brazilian Government, 1912—

Smart, Ornan Bridges: (m) 1908-1911.
722 Magnolia Avenue, Palm Beach, California.
With Jones & Smart, Mining Hardware, Phoenix, Arizona, 1911—

SMITH, EDWARD AUGUSTUS, Jr.: A. B. Geology and Mining, 1903.
 2536 Griffin Street, Denver, Colorado.
 Superintendent, Ward-Smuggler Gold Mining Co.;
 General Manager, Pittsburg and San Juan Mining Co.;
 Mining Engineer, Victor, Colorado.

***Smith, James Perrin:** (m) A. B. Wofford College, 1884; A. M. Vanderbilt, 1886;
 Ph. D. Göttingen, 1892.
 1335 Cowper Street, Palo Alto, California.
 Assistant Geologist and Chemist, Arkansas Geological Survey, 1887-1890;
 Assistant Geologist, U. S. Geological Survey, 1895-1906; Geologist, 1906—
 Professor, Paleontology, Stanford University, 1892—

***SMITH, PAUL LAVENDER:** (m) A. B. Geology and Mining, 1903.
 Mayfield, California.
 Assistant, Badger Gold Mining and Milling Co., Susanville, Oregon, 1903-1905;
 On exploration work, Kotsina, Alaska, 1906;
 With Guggenheim Exploration Co., Cariboo, British Columbia, 1907—

***SMITH, RICHARD GARRETT:** A. B. Geology and Mining, 1909.
 With Wild Goose Mining and Trading Co., Nome, Alaska, 1909;
 Engineer with Seiffert Mining Co., Nome, Alaska, 1909-1910;
 In charge prospecting and dredging, Natomas Consolidated, Gold Dredging Department,
 Natomas, Sacramento County, California, 1910—
 Goro-Sierra Supply Co., Placerville, California.

Smith, Walter Olney: 1908-1910.

***SMITH, WARREN DU PRE:** B. S. Wisconsin, 1902; A. M. Geology, Stanford, 1904;
 Ph. D. Wisconsin, 1908.
 113 Calle Marina, Manila, Philippine Islands.
 Field Assistant, Wisconsin Geological Survey, 1901-1903;
 Assistant, Mineralogy, Stanford University, 1904;
 Geologist, Mining Bureau, Manila, Philippine Islands, 1905-1906;
 Instructor, University of Wisconsin, 1907-1908;
 Chief of Division of Mines, Bureau of Sciences, Manila, Philippine Islands, 1907—

Snell, Lester William: 1910—
 Raton, New Mexico.
 Student, Geology and Mining, Stanford University.

***Soper, Edgar Kirke:** A. B. Geology and Mining, 1908.
 1126 Fifth Street, S. E., Minneapolis, Minnesota.
 Instructor in Economic Geology and Mining, Cornell University, 1908-1910;
 Assistant Professor in Economic Geology, University of Minnesota, Minneapolis, Minnesota, 1910—

Soper, Harold Calhoun: 1911-1913.
 1401 Cowper Street, Palo Alto, California.

***Soper, Ralph Hamilton:** 1908-1910.
 1401 Cowper Street, Palo Alto, California.
 Geologist with Brazilian Government, Rio de Janeiro, 1911—

Spencer, Lawrence M.: (m) 1913—
 San Francisco, California.
 Student, Geology and Mining, Stanford University.

Stanley, Herbert M.: 1913—
 269 Hawthorne Avenue, Palo Alto, California.
 Student, Geology and Mining, Stanford University.

*†**STARK, HERBERT SPENCER:** (m) A. B. Geology, 1895; d. February 18, 1910.
 Superintendent and General Manager Crown Reef Mining Co., Johannesburg, South Africa,
 1895-1899, 1900-1907;
 Captain Engineers, British Army in Boer War, 1899-1900;
 Consulting Engineer with Wingfield & Nixon, Nevada, 1907-1910.

***Starnes, Xavier Brand:** 1905-1909.

Stedler, Charles John: 1902-1904.

***STEELE, DONALD:** (m) A. B. Geology and Mining, 1908.
 724 Bryant Street, Palo Alto, California.
 Assistant in Mining, Stanford University, 1908-1909;
 Assistant Engineer, Nevada Consolidated Copper Co., 1909;
 Engineer with Griffin Co., Alaska Commercial Building, San Francisco, California.

Steel, Harry Bismarck: 1894-1899.

Steele, Edgar Willis: 1897-1899.

Steiny, Homer J.: 1912—
Stockton, California.
Student, Geology and Mining, Stanford University.

Stevens, George Richard: (m) A. B. Geology and Mining, 1906.
Magnolia Apartments, 047 Bush Street, San Francisco, California.
Assistant Superintendent, Wei-Hai-Wei Mining Co., 1905-1906;
Assayer and Chemist, Glasgow and West Exploration Co., 1906-1909;
Assistant, San Francisco City Engineer's office, 1909—
363 Page Street, San Francisco, California.

*Stewart, Edwin John: A. B. Geology and Mining, 1912.
2631 Menlo Avenue, Los Angeles, California.

Stewart, Milton Sheldon: 1905-1909.

Stewart, Royal Minton: 1908-1910.

*Stone, Herbert: A. B. Geology and Mining, 1913.
1229 Webster Street, Palo Alto, California.
Graduate Student, Geology and Mining, Stanford University, 1914.
Assistant in Geology, Stanford University, 1913-1914;
President Stanford Section G. M. S. A. U., 1914.
Engineer with J. M. Hyde, 578 Sacramento Street, San Francisco, 1914—

*Strout, Ernest Allen: (m) A. B. Geology and Mining, 1902.
713 Hearst Building, San Francisco, California.
Surveyor, Centre Star and War Eagle Mining Cos., Roseland, British Columbia;
Lake View Consolidated, Limited, Kalgoorlie, West Australia;
Acting General Manager, Lancaster Gold Mining Co., Limited;
Princess Estate Gold Mining Co., Limited;
Geduld Gold Mining Co., Limited, Transvaal, South Africa;
Underground Manager, Witwatersrand Deep, Limited, Transvaal;
Assistant and General Superintendent, Guanajuato Development Co., Mexico;
With the Compania de Santa Gertrudes;
Pachuca, Hidalgo, Mexico, 1911-1913.

*Stuart, William Elder: (m) A. B. Geology and Mining, 1895.
Burlingame, California.
Expert to Ramirez Consolidated Quicksilver Mines, San Benito County, 1900-1904;
Attorney at Law, Specialty, Land and Mining, Oakland, California.

Sundell, Alfred Luis: 1908-1911.
Alameda, California.

Swem, Harry Archie: 1909-1913.

Swinerton, Alfred Bingham: 1900-1906.

*Taber, Stephen: A. B. Geology and Mining, 1906; Ph. D. University of Virginia, 1910.
105 West Grace Street, Richmond, Virginia.
Assayer and Chemist, Santa Maria de Guadalupe y Anexas Mines, 1906-1907;
Field Assistant, California Earthquake Investigation Commission, 1906;
Assistant Geologist, Virginia Geological Survey and Instructor in Economic Geology, University of Virginia, 1908-1911;
Professor of Geology and Mineralogy, University of South Carolina, Columbia, South Carolina, 1911;
Economic Geologist.

*Taggart, Arthur Fay: A. B. Geology and Mining, 1909; E. M. 1910.
Instructor, Mining, Yale University, New Haven, Connecticut, 1910.

*Tarpey, David: 1901-1904.

*Taylor, Louis John: A. B. Geology and Mining, 1912.
President Stanford Section G. M. S. A. U., 1912;
Assistant Engineer, State Highway Commission, California, 1912;
Mine Sampler, La Leonessa Mine, Matagalpa, Nicaragua, Central America, 1913—

Taylor, Wilder: 1899-1903.

Teel, Claude Cameron: 1905-1907.

*TEMPLETON, EUGENE CRITTENDEN: A. B. Geology, 1910.
 375 Everett Avenue, Palo Alto, California.
 Field Assistant, Geology Department, Stanford University, 1911-1912;
 Petroleum Geologist with H. Johnson, 805 H. W. Hellman Building, Los Angeles, California.

Templeton, Ruric Ruskin: 1911—
 375 Everett Avenue, Palo Alto, California.
 Student, Geology, Stanford University.

THIES, ARNO GROTE: (m) A. B. Geology, 1902.
 Cashier, Carbo State Bank, Hanna, Wyoming.

*THOMAS, CHESTER A.: (m) A. B. Geology, 1898.
 Dawson, Yukon Territory, Canada.
 Chief Engineer, United Verde Copper Co., 1899-1904;
 Resident Manager, Yukon Gold Co., 1904—
 Dawson, Yukon Territory, Canada.

Thomas, Dan Horace: 1908-1911.

Thomas, Frank Holman: 1904-1906.

Thomas, John Shepard: 1894-1899.

*THOMS, CLIFFORD CORLTON: (m) A. B. Geology and Mining, 1901.
 Assistant, California Mining Bureau;
 Millman, Mill Superintendent, Field Assistant for Nitre Co.;
 Assayer, Cyanide man, Mine Surveyor in Mexico, Arizona and California;
 Cyanide Superintendent, Bagdad-Chase Gold Mining Co., Barstow, 1909; Rialto, 1910-1911;
 Fuenti Oil Co., Fullerton, California, 1911-1913;
 Olinda Gasoline Co., 1913—
 R. D. 2, Fullerton, California.

*Thomson, Austin McKee: 1899-1903.

*THOMPSON, THOMAS WEST: A. B. Geology and Mining, 1912.
 909 Alma Street, Palo Alto, California.
 La Leonessa Mine, Matagalpa, Nicaragua, Central America, 1912—

*Tolman, Cyrus Fisher, Jr.: (m) B. S. Chicago, 1896; Fellow in Geology, Chicago,
 1897-1898.
 723 Hamilton Avenue, Palo Alto, California.
 Territorial Geologist of Arizona, 1910-1912;
 Professor, Geology, University of Arizona, 1905-1906;
 Professor, Geology and Mining, 1906-1912;
 Associate Professor, Economic Geology, Stanford University, 1912—

Townsend, Thomas Harold: 1913—
 San Jose, California.
 Student, Geology and Mining, Stanford University.

Trent, Walter Edwin: 1902-1906.

Trost, Brice Loveland, 1902-1905.

*TURNER, FRANK WARREN: A. B. Geology and Mining, 1912.
 301 Mission Street, San Francisco, California.
 President Stanford Section G. M. S. A. U., 1908-1909;
 Field Geologist and Chemical Engineer with W. P. Fuller Paint Co., San Francisco, 1912—

Turner, Henry Ward: B. S. Washington, 1895; Graduate, Geology, Stanford—
 Assistant Entomologist, Cornell, 1880;
 Assistant Entomologist, U. S. Department of Agriculture, 1882;
 Assistant Geologist, U. S. Geological Survey, 1883-1895; Geologist, 1895-1901;
 Manager, Marfa and Mariposa Quicksilver Mine, Terlingua, Texas, 1904-1905;
 Consulting Engineer, Ladd Metals Co., Portland, Oregon, 1906-1907;
 Consulting Economic Geologist and Mining Engineer, 1901-1904, 1908—
 Alaska Commercial Building, San Francisco, California.

*Turner, Thomas Norton: 1907-1912, 1914—
 301 Mission Street, San Francisco, California.
 Cable address: "Orskold," Nikolaiersk, East Siberia.
 Superintendent Orsk Gold Dredging Co., Nikolaiersk-on-Amur, East Siberia, 1912-1913; 1914—
 Student, Stanford University, 1914.

Tuttle, Albert, Leon: 1906-1908.

Urban, Joseph Charles: 1912—
 Hamilton City, California.
 Student, Geology and Mining, Stanford University.

Van Campen, Frank Rumsey: 1906-1908.
 General Manager, Beatson Copper Co., La Touche, Alaska.

***Vandervoort, Theodore, Jr.:** 1904-1908.
 Palo Alto, California.
 In Business, Requa, Humboldt County, California.

VAN NORDEN, MAXIMILIAN LANGDON: A. B. Geology and Mining, 1905.
 715 Madison Avenue, New York.
 Real Estate Business;
 Secretary, Bankers' Investing Co., 46 East 25th Street, New York City, N. Y.

***Vrang, Christian Madsen:** 1909—
 Dawson, Yukon Territory, Canada.
 Student, Geology, Stanford University.

Wadsworth, Philip Arthur: 1897-1900.

***WAELTY, WALDO RALPH:** A. B. Chemistry, 1913.
 773 Franklin Street, Santa Clara, California.
 Assistant in Assaying, Stanford University, 1913.
 Chemist with W. P. Fuller Paint Co., South San Francisco, 1913—

Walker, Henry Earl: 1900-1904.

***WALKER, WILLIAM LESTER:** A. B. Geology and Mining, 1903.
 979 Sutter Street, San Francisco, California.
 Assistant City Engineer, Monrovia, 1904;
 Field Assistant, U. S. Geological Survey, 1905-1907;
 Mineral Inspector, U. S. General Land Office, 1907;
 Chief Geologist, Associated Oil Co., 1912-1913.

***Wallace, Bruce:** (m) 1908-1912.

***Ward, Newman:** 1910-1913, 1914—
 450 Tenth Street, Portland, Oregon.
 Student, Geology and Mining, Stanford University.

***WARING, CLARENCE ALMON:** (m) A. B. Geology, 1911; A. M. 1914.
 Box 162, Mayfield, California.
 Geologist, Trinidad Asphalt Co., Trinidad, British West Indies, 1911-1912;
 Field Assistant, Geologist, Stanford University, 1913;
 Geologist, California State Mining Bureau, 1914, Ferry Building, San Francisco, California.

***WARING, GERALD ASHLEY:** (m) A. B. Geology, 1905.
 Box 162, Mayfield, California.
 Field Assistant, U. S. Geological Survey, 1906-1907; Junior Geologist, 1907-1909; Assistant Geologist, 1909;
 Hydrographer, U. S. Geological Survey, 1909-1911;
 Geologist with Brazilian Government, 1911-1913;
 U. S. Geological Survey, Washington, D. C., 1914—

Watson, Frank Whalley: 1898-1900.

Weber, Harold Davis: 1913—
 2631 Menlo Avenue, Los Angeles, California.
 Student, Geology and Mining, Stanford University.

Wegis, Antone Henry: 1911-1913.

Weidman, Edwin Marston: 1909-1911.

Wheeler, Charles Edward: 1914—
 Milwaukee, Wisconsin.
 Student, Geology and Mining, Stanford University.

White, Joseph Ephraim: 1897-1901.
 Superintendent, Buclineo Mine, Monterey County, 1911—

Whitted, James Herbert: 1912—
 San Dimas, California.
 Student, Geology and Mining, Stanford University.

Wickersham, Newton W.: 1911—
 Los Angeles, California.
 Student, Geology and Mining, Stanford University.

***WILDE, FRANK LUQUER**: A. B. Geology and Mining, 1911.
 Geologist with Caribbean Petroleum Co., Venezuela.
 Care L. J. Proctor, Box 387, Caracas, Venezuela.

***Wiley, De Witt Charles**: A. B. Geology and Mining, 1905.
 320 19th Avenue, Seattle, Washington.
 Assistant Engineer, Bay and River Dredging Co., 1904-1906;
 Manager of shingle mill, Edmonds, Washington, 1906—

***WILHELM, VICTOR HUGO**: A. B. Geology and Mining, 1907.
 230 13th Street, Portland, Oregon.
 Engineer, Le Lamar Mines, Limited, Le Lamar, Idaho;
 Duplex Cyanide Plant, Searchlight, Nevada;
 Sagamore Mining Co., Barnwell;
 Palmer Mountain Power and Tunnel Co., Loomis, Washington;
 Electrical Engineer, Copper River Railroad, Miles Glacier, Alaska;
 Civil and Mining Engineer, Copper River District, and Controller Bay Coal Fields, Miles
 Glacier, Cordova, Alaska.

Wilkeson, Livingston Evans: 1908-1910.

***WILLIAMS, HORACE ELBERT**: A. M. Geology and Mining, 1892.
 Fayetteville, Arkansas.
 Servicio Geologico, Rua Veridiana, Sao Paulo, Brazil, 1892—

***WILLIAMS, WILLIAM ALFRED**: A. B. Geology, 1903.
 1078 Green Street, San Francisco, California.
 Geologist with Associated Oil Co., 1908-1912;
 Geologist with General Petroleum Co., 1912—

Wilson, Allan Kay: 1891-1893.

Wilson, Arden Martin: A. B. Geology and Mining, 1905.
 Box 566, Telluride, Colorado.
 Cable address: "Wilson," Telluride.
 Assayer and Chemist, Park New Era Mines, Mason, Montana, 1905-1906;
 Chemist for Monsanto Chemical Works, St. Louis, Missouri, 1906-1907;
 Chief Chemist, Vanadium Alloys Co., Newmire, Colorado, 1907-1911;
 Mine Operator (Uranium and Vanadium Ores), Nucla, Colorado.

Wolf, Leslie Milton: 1913—
 1748 Beech Street, San Diego, California.
 Student, Geology and Mining, Stanford University.

Workman, Thomas E.: 1911—
 Los Angeles, California.
 Student, Geology and Mining, Stanford University.

Wright, Ernest Neall, Jr.: 1912—
 Pasadena, California.
 Student, Geology and Mining, Stanford University.

Wright, Hugh: 1905-1908.

***WRIGHT, WILLIAM QUINBY**: (m) A. B. Geology and Mining, 1900.
 727 Merchants Exchange Building, San Francisco, California.
 Chief Engineer, Northern California Mining Co.;
 Chief Engineer, Bay and River Dredging Co., Sausalito, California.
 Consulting Engineer, San Francisco, California.

Wylie, James Thomas: 1913—
 Whakarewarewa, Rotorua, New Zealand.
 Student, Geology and Mining, Stanford University, S. A. E. House, Campus.

***YOUNG, HAYES WILSON**: A. B. Geology and Mining, 1911; E. M. 1912.
 Stanford University, California.
 Instructor, Metallurgy, Stanford University, 1911—

***ZOFFMAN, GEORGE FREDERICK**: A. B. Geology and Mining, 1907.
 256 North 15th Street, San Jose, California.
 Cyanide Foreman, 1907-1908.
 Engineer and Assayer, 1908-1909;
 Millman, 1909;
 Superintendent Providencia Mining Co., 1910—
 Apartado 67, Guanajuato, Esto de Guanajuato, Mexico.



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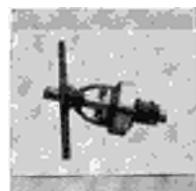
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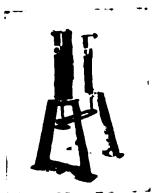
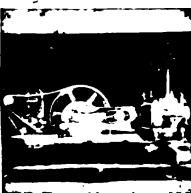
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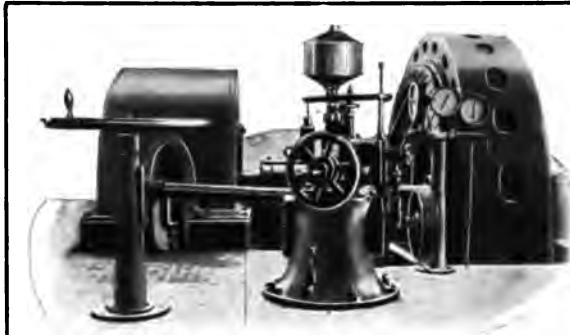


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